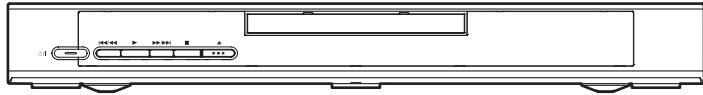


HITACHI

SERVICE MANUAL



SM9303

DVP335E

DVP335EUK



SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

DVD PLAYER

April 2003

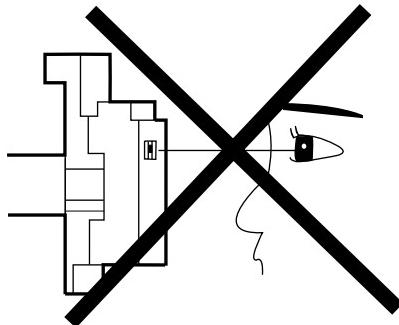
Digital Media Division

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1-1 LASER BEAM SAFETY PRECAUTIONS

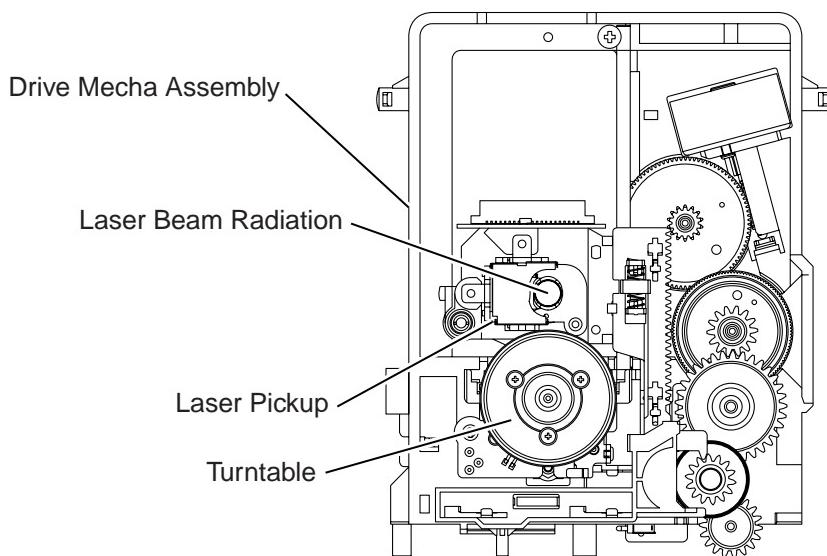
This DVD player uses a pickup that emits a laser beam.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.



**CAUTION - VISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
AVOID EXPOSURE TO BEAM.**



Location: Inside Top of DVD mechanism.

1-2 IMPORTANT SAFETY PRECAUTIONS

1-2-1 Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a  on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

1-2-2 Precautions during Servicing

A. Parts identified by the  symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

- 1)Wires covered with PVC tubing
- 2)Double insulated wires
- 3)High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

- 1)Insulation tape
- 2)PVC tubing
- 3)Spacers
- 4)Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

- I.** Also check areas surrounding repaired locations.
- J.** Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.

Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

1-2-3 Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1-2-1)

Table 1-2-1 : Ratings for selected area

AC Line Voltage	Clearance Distance (d) (d')
230 V	$\geq 3 \text{ mm}(d)$ $\geq 6 \text{ mm}(d')$

Note: This table is unofficial and for reference only.
Be sure to confirm the precise values.

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z . See Fig. 1-2-2 and the following table.

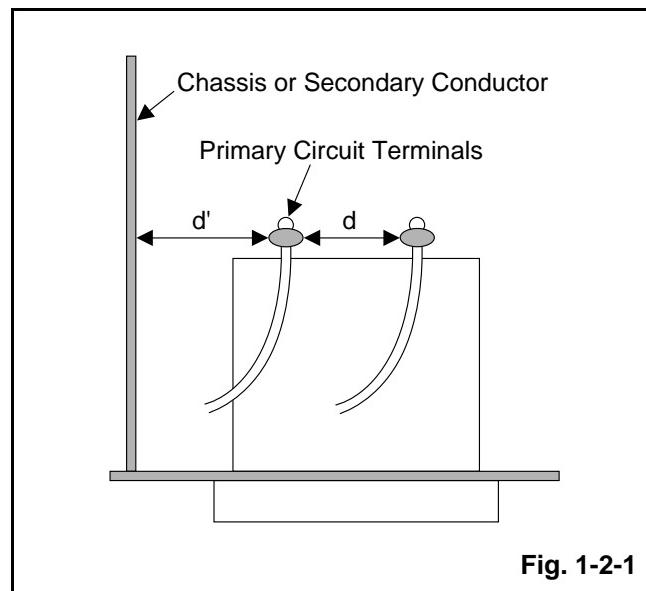


Fig. 1-2-1

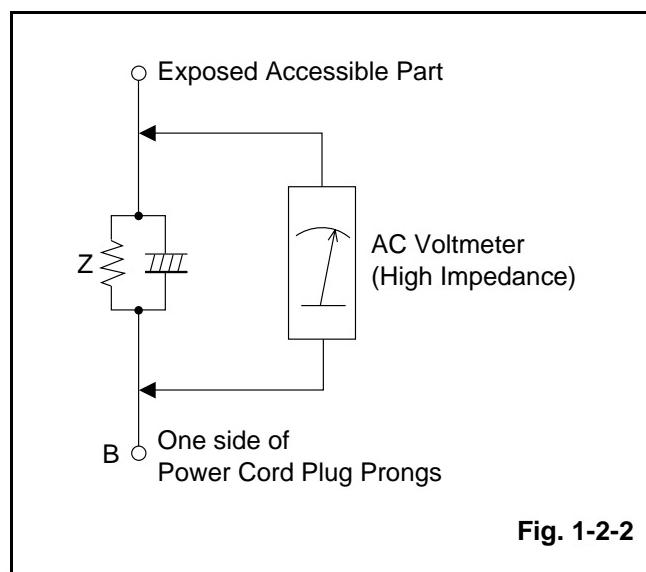


Fig. 1-2-2

Table 1-2-2: Leakage current ratings for selected areas

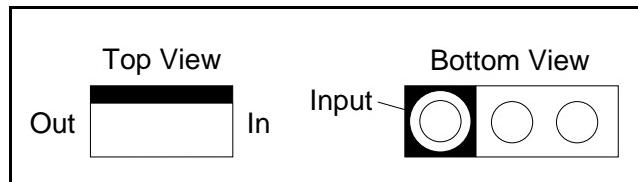
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
230 V	2kΩ RES. Connected in parallel	$i \leq 0.7 \text{ mA AC Peak}$ $i \leq 2 \text{ mA DC}$	RF or Antenna terminals
	50kΩ RES. Connected in parallel	$i \leq 0.7 \text{ mA AC Peak}$ $i \leq 2 \text{ mA DC}$	A/V Input, Output

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

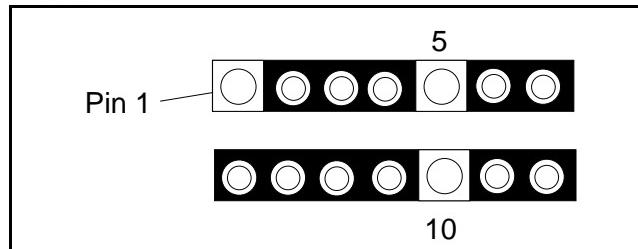
1-3 STANDARD NOTES FOR SERVICING

1-3-1 Circuit Board Indications

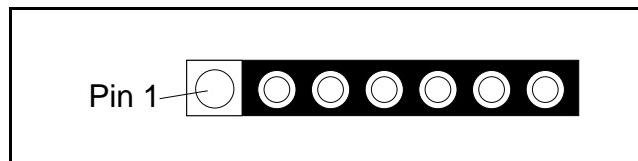
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

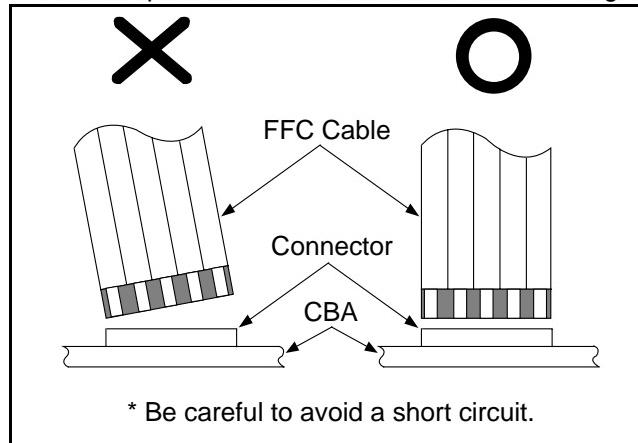


3. The 1st pin of every male connector is indicated as shown.



1-3-2 Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



1-3-3 How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

- (1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. 1-3-1)

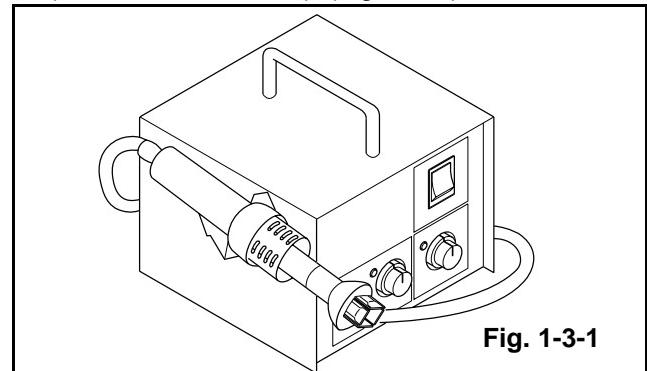


Fig. 1-3-1

- (2) Remove the flat pack-IC with tweezers while applying the hot air.
- (3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. 1-3-6)
- (4) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. 1-3-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

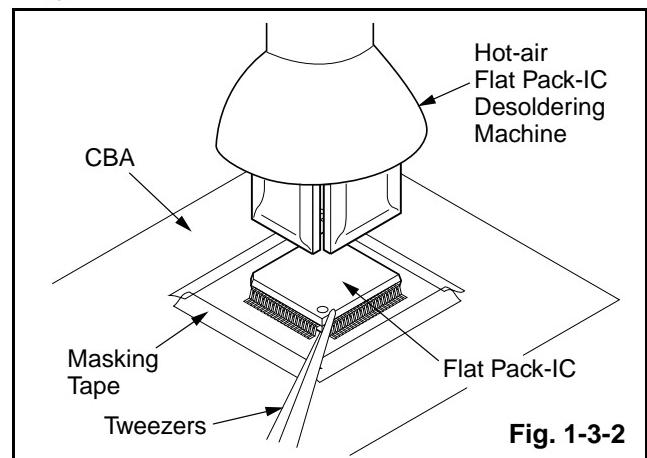
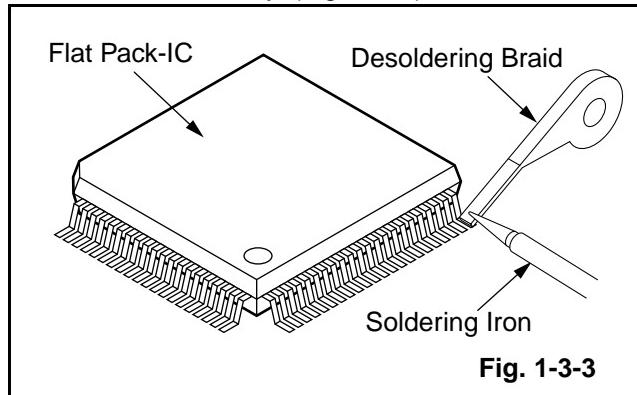


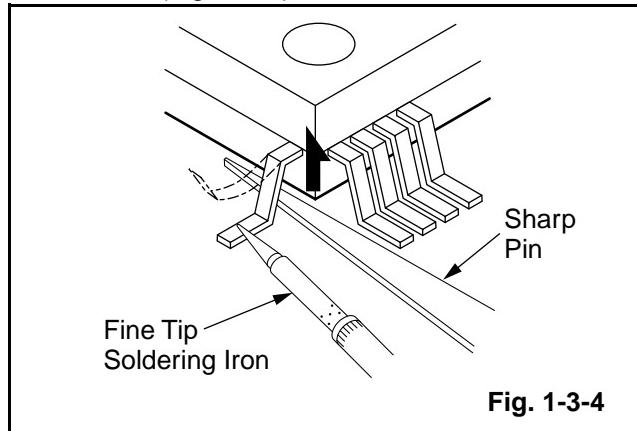
Fig. 1-3-2

With Soldering Iron:

- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. 1-3-3)



- (2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. 1-3-4)



- (3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. 1-3-5)

- (4) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)

With Iron Wire:

- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. 1-3-3)

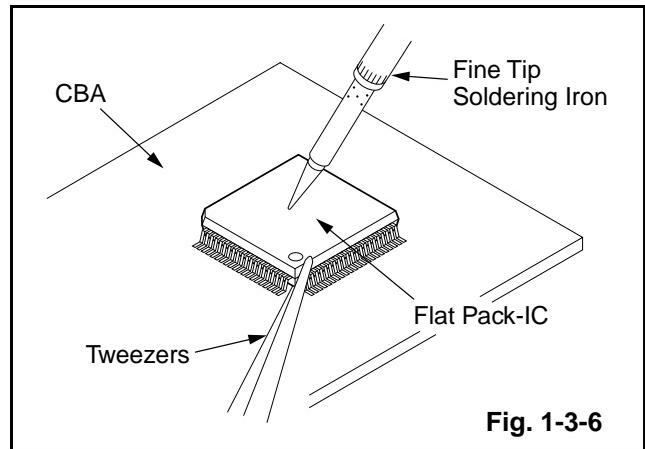
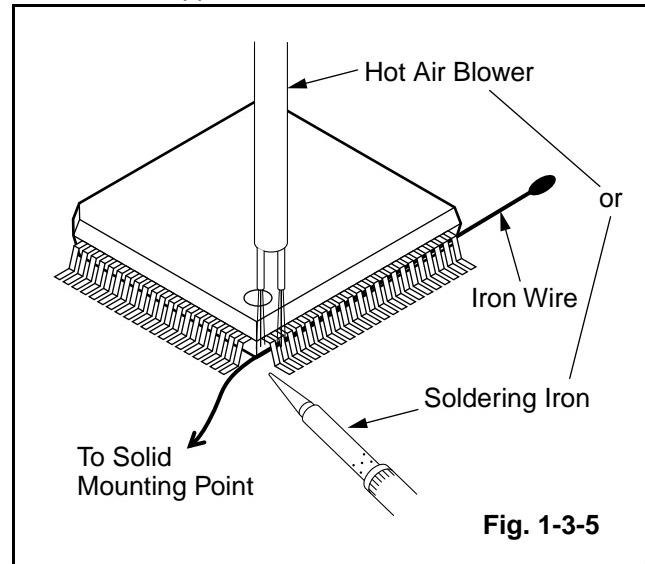
- (2) Affix the wire to a workbench or solid mounting point, as shown in Fig. 1-3-5.

- (3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. 1-3-5

- (4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. 1-3-5)
- (5) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)

Note:

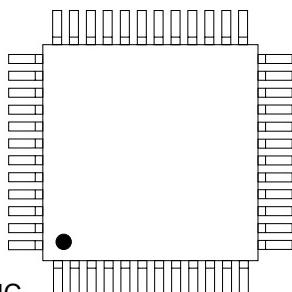
When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.



2. Installation

- (1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
- (2) The “●” mark on the flat pack-IC indicates pin 1. (See Fig. 1-3-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. 1-3-8.)
- (3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Example :



Pin 1 of the Flat Pack-IC
is indicated by a "●" mark.

Fig. 1-3-7

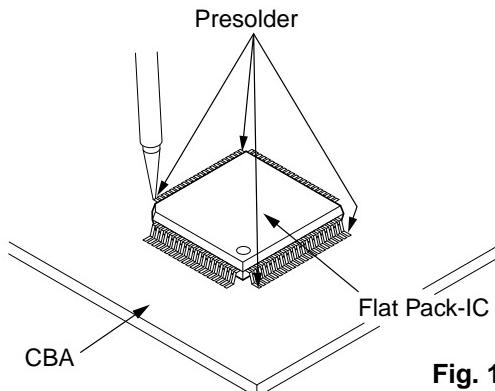


Fig. 1-3-8

1-3-4 Instructions for Handling Semi-conductors

Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

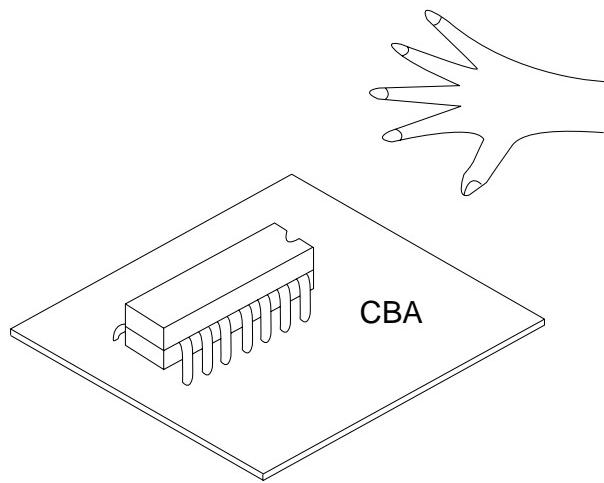
1. Ground for Human Body

Be sure to wear a grounding band ($1M\Omega$) that is properly grounded to remove any static electricity that may be charged on the body.

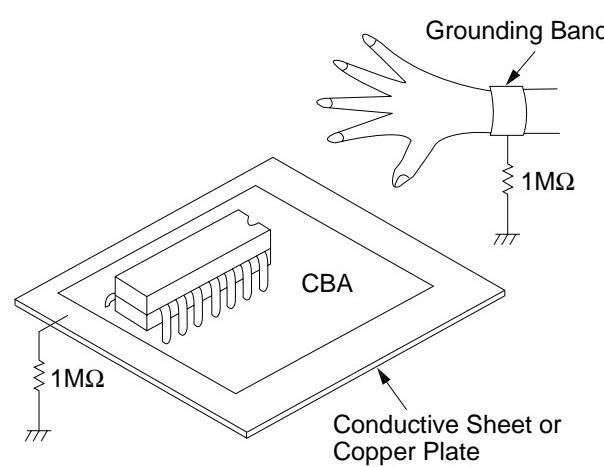
2. Ground for Workbench

- (1) Be sure to place a conductive sheet or copper plate with proper grounding ($1M\Omega$) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

< Incorrect >



< Correct >



2 | GENERAL INFORMATION

2-1 SPECIFICATIONS

Product type :	DVD Player
Discs :	DVD video
	Audio CD
Output signal format :	PAL colour
Frequency response	
DVD (linear sound) :	20 Hz to 22 kHz (sample rate: 48 kHz) 20 Hz to 44 kHz (sample rate: 96 kHz)
CD :	20 Hz to 20 kHz
Signal-to-noise ratio (S/N ratio)	
CD :	110 dB (JEITA)
Dynamic range	
DVD (linear sound) :	95 dB
CD :	94 dB (JEITA)
Total distortion factor	
CD :	0.005% (JEITA)
Wow and flutter :	Below the measurement limitation (+/-0.001% W PEAK) (JEITA)
Connections	
S-Video output :	Mini DIN 4-pin jack (75 ohm)
Video output :	One RCA connector/ EURO A/V jack, 1 Vp-p (75 ohm)
Coaxial digital audio output :	One pin jack, 500mVp-p (75 ohm)
Analog audio output :	Two RCA connectors (one left channel, one right channel)/ EURO A/V jack, 2 Vrms (47 kilo-ohm)
Optical digital audio output :	Optical connector
RGB video output :	EURO A/V jack (R)/(G)/(B), 700 mVp-p (75 ohm)
Power source :	AC 220-240 V, 50 Hz
Power consumption :	15 W (standby: 5 W)
Operating temperature :	41°F to 104°F (5°C to 40°C)
Dimensions :	W 17-1/8" (435 mm) H 2-1/4" (55 mm) D 8-5/16" (211 mm)
Weight :	3.8 lbs (1.8 kg)

• Designs and specifications are subject to change without notice.

2-2 COMPARISON OF MODELS

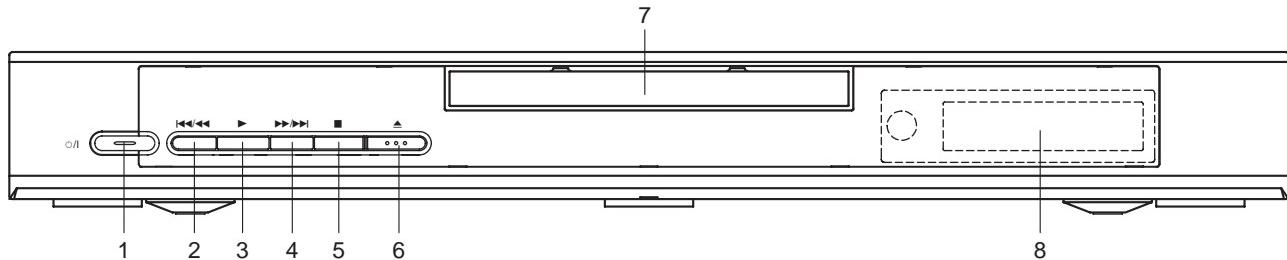
: The halftone parts are the differences from the previous model.

ITEM	DV-P335E/P335E(UK)	DV-P325E/P325E(UK)
APPEARANCE	Dimensional	435(W) x 55(H) x 211(D) mm
	Weight	1.8 kg
	Tray Panel	Clear
	Color Front / Button	Silver/Silver
	Hot Stamp	---
	Ultra Vision Badge	---
GENERAL	Drive Speed	1x
	Laser	2
	DVD/VCD/SVCD/CD-DA	O / --- / --- / O
	CD-R/CD-RW/DVD-R (Video Format)	O / O / O
	DVD-RAM (VR Format)	---
	MP3	O
	OSD languages	7 (English, French, Spanish Italian, German, Swedish, Dutch)
	Jog Shuttle on Front	---
VIDEO	Headphone Jack / Volume	--- / ---
	PAL Disc NTSC Out	O
	Video Out Mode NTSC/PAL/PAL60	--- / O / O
	S-Video / Component / Composite	O / O / O
	Video D/A Converter	10bit
	Black Level Select	---
	Picture Control	---
AUDIO	Progressive Out	---
	Audio D/A Converter	192kHz / 24bit
	Digital Audio Out Optical / Coaxial	O / O
	Dolby Digital 5.1 ch Decode	---
	DTS Digital Out	O
	Virtual Surround	O
	Dynamic Range Compression (Dolby Digital)	O
TRICK PLAY	DVD Audio	---
	Power on sound	---
	Search Speed	2 to 100 (FORWARD/REWIND) (DVD: 2, 8, 50, 100/CD: 16)
	Slow Speed	1/16, 1/8, 1/2 (FORWARD/REWIND)
	IP Search (Smooth 2x Play)	O
	2x Play with Audio	---
	Step Forward / Reverse	O / ---
	Still Picture Select (Frame/Field)	Auto Only
		Auto Only

	ITEM	DV-P335E/P335E(UK)	DV-P325E/P325E(UK)
FEATURES	Disc Navigation	O	---
REMOTE CONTROLLER	DVD Zoom x2 / x4 / x16	O / O / ---	O / O / ---
Program and Random Play of DVD	---	---	---
A-B Repeat	O	O	O
Repeat	O	O	O
Resume Play	O (Resume is not effected after power off)	O	O
Front Panel Display Dimmer	O	O	O
Screen Saver	O	O	O
Auto Power Off	O	O	O
Jog Shuttle on Remote	---	---	---
TV Control	---	---	---

2-3 OPERATING CONTROLS AND FUNCTIONS

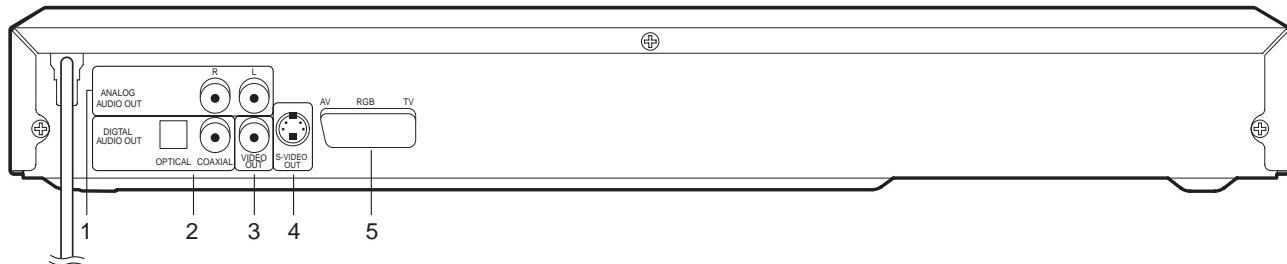
FRONT PANEL



1. **O/I (POWER/STANDBY)**
to switch the player to ON or OFF
(As to the indication of the Operate switch, "I" indicates ON and "O" indicates electrical power STANDBY)
2. **SKIP/FR**
goes to previous chapter or track during playback;
press and hold for 1.5 seconds for a reverse search
3. **► (PLAY)**
to start or resume disc playback

4. **FF/SKIP**
goes to next chapter or track during playback; press and hold for 1.5 seconds for a forward search
5. **■ (STOP)**
to stop playback
6. **▲ (OPEN/CLOSE)**
to open/close the disc tray
7. **Disc tray**
8. **Display**

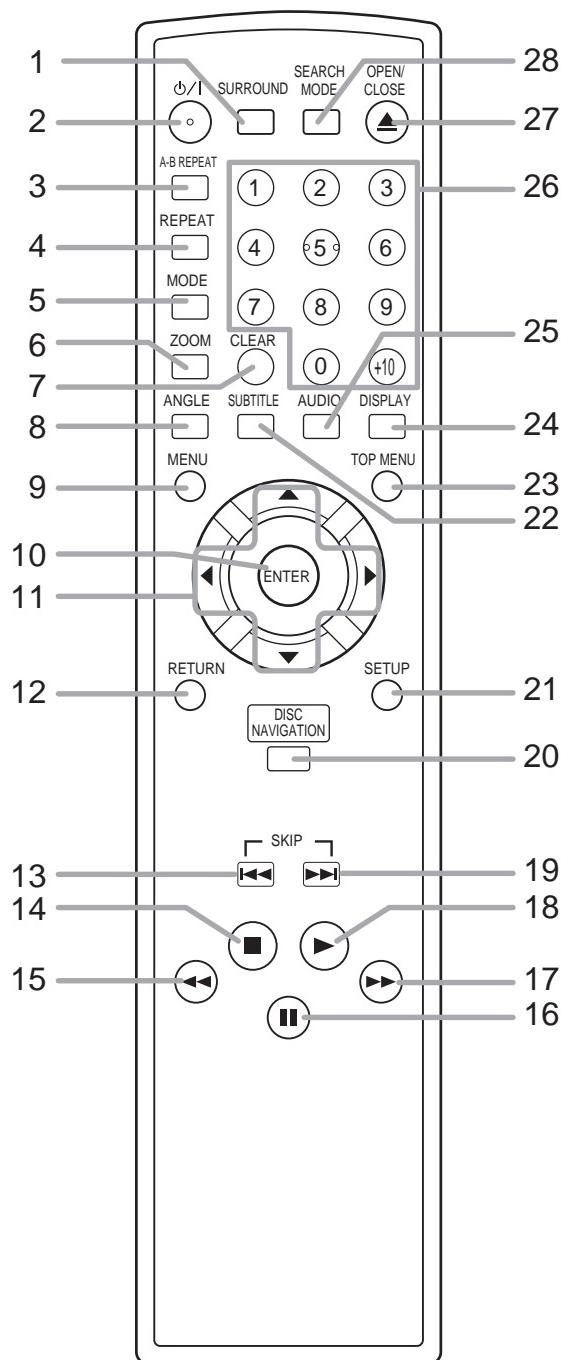
REAR PANEL



1. **ANALOG AUDIO OUT JACKS**
Connect to the Audio input jacks of A/V-compatible TV or wide screen TV, Stereo system.
2. **DIGITAL AUDIO OUT JACKS:**
Use either an optical or coaxial digital cable to connect to a compatible Dolby Digital receiver. Use to connect to a Dolby Digital decoder or DTS decoder.
3. **VIDEO OUT JACK**
Use a video cable to connect one of the jack to Video input on your A/V-compatible TV or wide screen TV, Stereo system.

4. **S-VIDEO OUT JACK**
Use the S-Video cable to connect this jack to the S-Video jack on your A/V-compatible TV or wide screen TV for a higher quality picture.
5. **EURO A/V (SCART) JACK**
Use the Euro audio/video cable to connect this jack to the 21 pin scart jack on your A/V-compatible TV or wide screen TV for a best quality picture.

REMOTE CONTROL

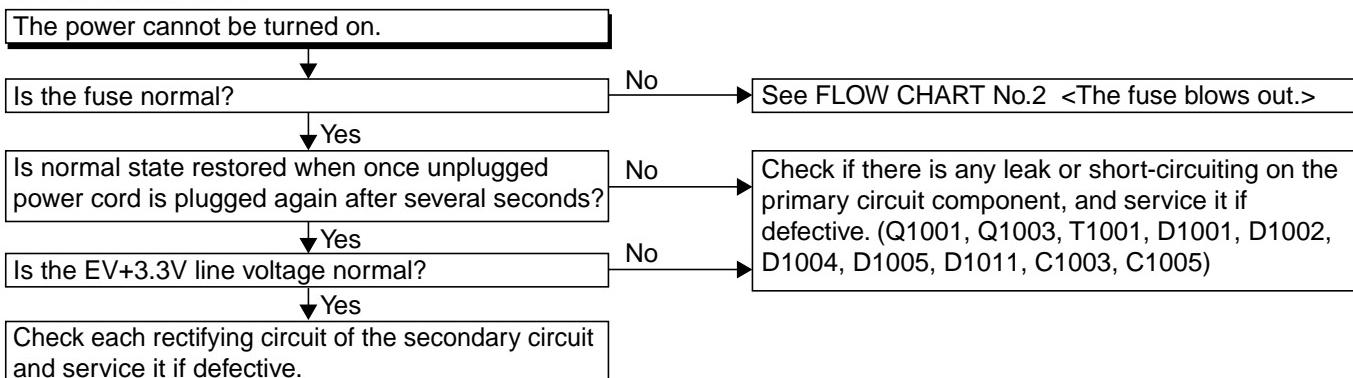


- 1. SURROUND**
Press to activate the virtual sound.
- 2. O/I (POWER/STANDBY)**
to switch the player to ON or OFF
(As to the indication of the Operate switch, "I" indicates ON and "O" indicates electrical power STANDBY)
- 3. A-B REPEAT**
Repeats playback of a selected section.
- 4. REPEAT**
Repeats playback of the current disc, title, chapter or track.
- 5. MODE**
to set up programmed or random playback (Audio CD)
to set the virtual surround during DVD playback
- 6. ZOOM**
enlarge DVD video image
- 7. CLEAR**
- 8. ANGLE**
select DVD camera angle
- 9. MENU**
to display the menu of the DVD disc
- 10. ENTER**
acknowledge menu selection
- 11. Arrow Buttons (◀▶▼▲)**
Move the cursor and determines its position.
- 12. RETURN**
to return previous or remove setup menu
- 13. SKIP ◀◀**
goes to previous chapter or track during playback; press and hold for 1.5 seconds for a reverse search
- 14. ■ (STOP)**
to stop playback
- 15. ◀◀**
to view DVD picture in fast reverse motion
- 16. ▶▶ (PAUSE/STEP)**
Press to pause Disc playback. Press repeatedly to advance the DVD picture step by step (or one frame at a time).
- 17. ▶▶**
to view DVD picture in fast forward motion
- 18. ▶▶ (PLAY)**
to start or resume disc playback
- 19. SKIP ▶▶**
goes to next chapter or track during playback; press and hold for 1.5 seconds for a forward search
- 20. DISC NAVIGATION**
Press to display the first scenes of each chapter of the title being played.
- 21. SETUP**
Press to enter the setup mode.
- 22. SUBTITLE**
Press to select the desired subtitle language.
- 23. TOP MENU**
Press to call up the title menu.
- 24. DISPLAY**
Press to access or remove the display screen during DVD or Audio CD playback.
- 25. AUDIO**
Press to select a desired audio language or sound mode.
- 26. Numerical Buttons**
Press to directly select a Track (Audio CD) for playback.
- 27. ▲ (OPEN/CLOSE)**
to open/close the disc tray
- 28. SEARCH MODE**
Press to access or remove the Search display, which allows you to go directly to a specific Title/Chapter/Track/Time.

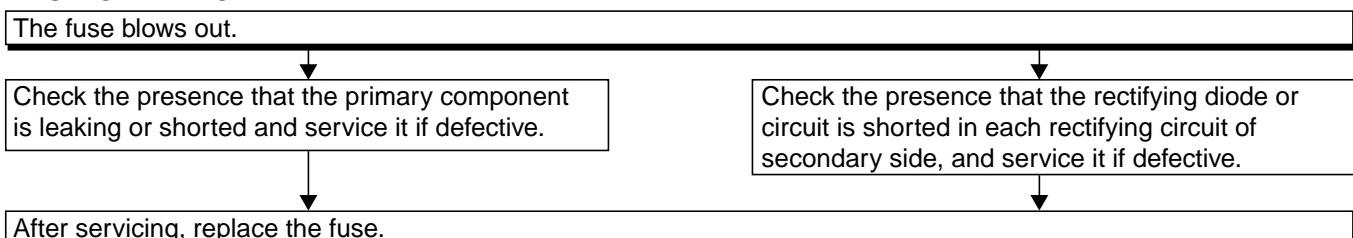
3-1 TROUBLESHOOTING

Troubleshooting is how to service for the specifying malfunction or poor parts.
Detect malfunction or poor parts and service as the following charts.

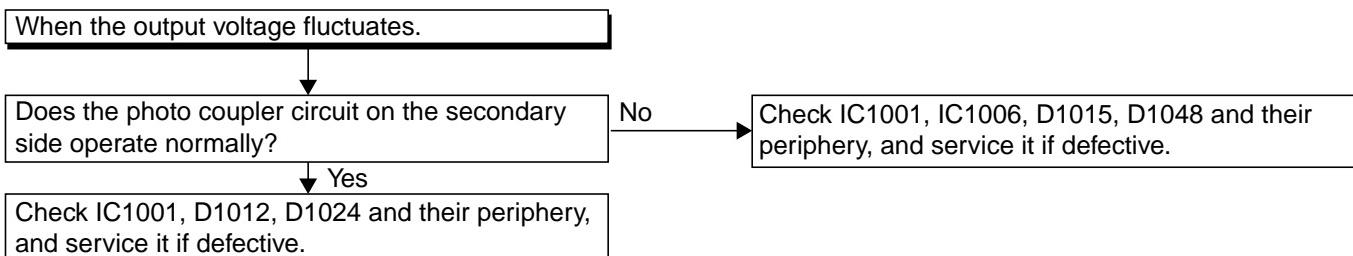
FLOW CHART NO.1



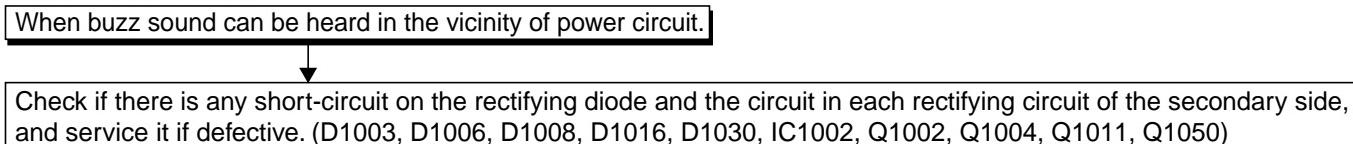
FLOW CHART NO.2



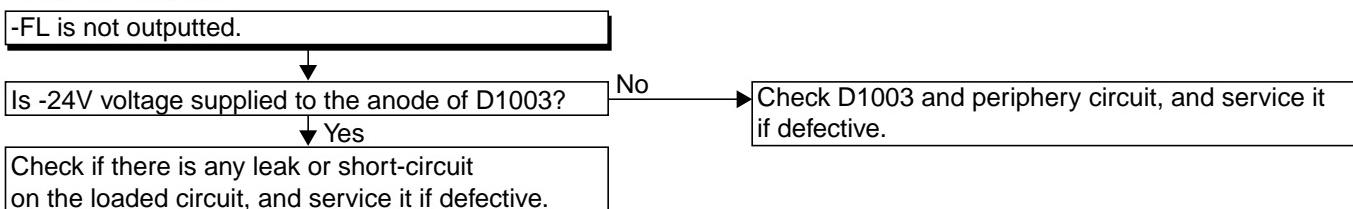
FLOW CHART NO.3



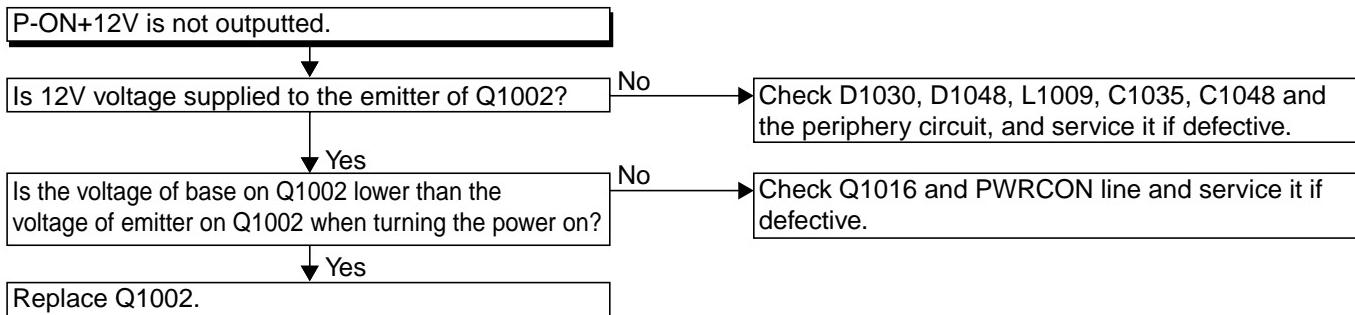
FLOW CHART NO.4



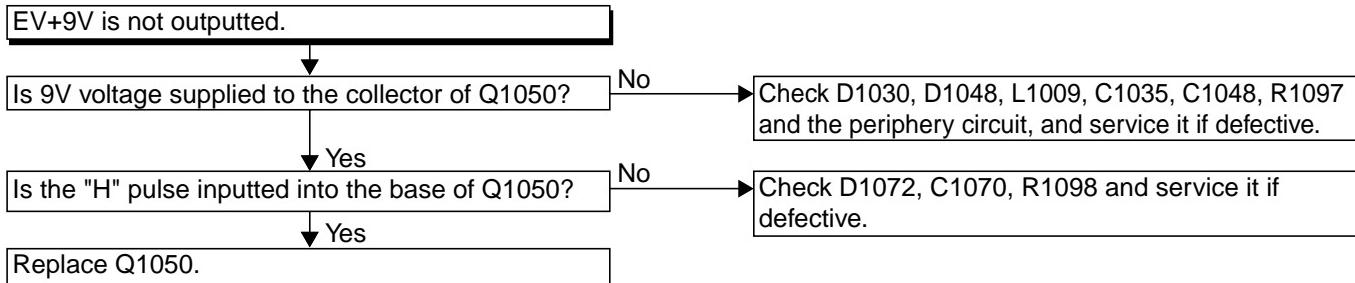
FLOW CHART NO.5



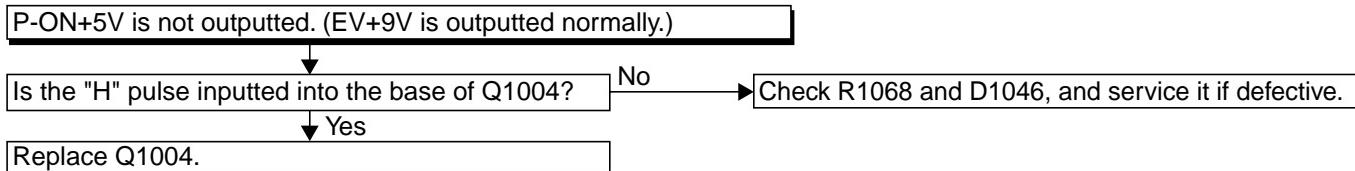
FLOW CHART NO.6



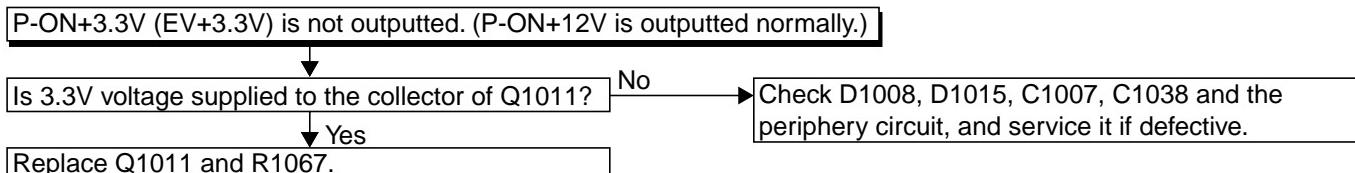
FLOW CHART NO.7



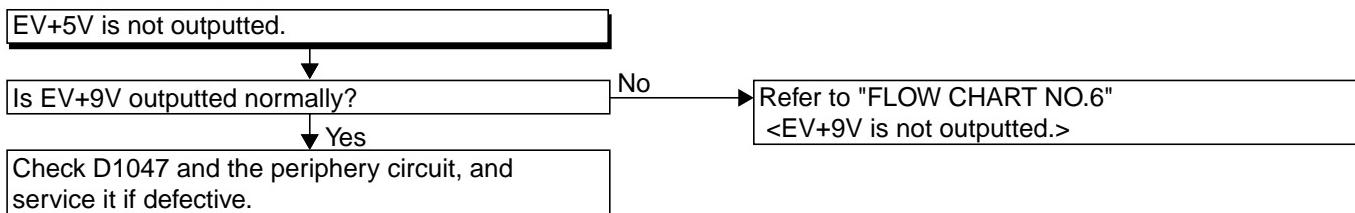
FLOW CHART NO.8



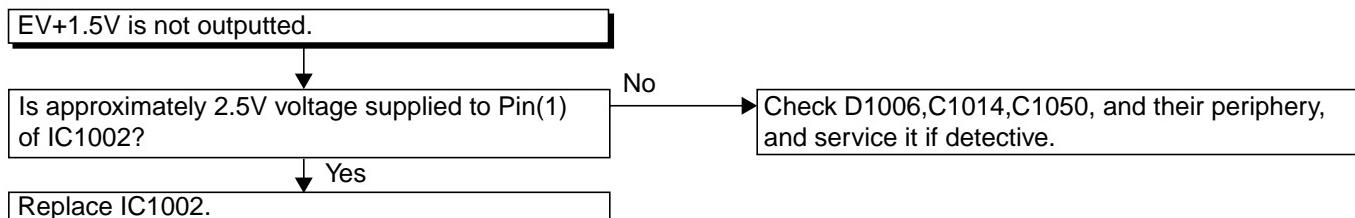
FLOW CHART NO.9



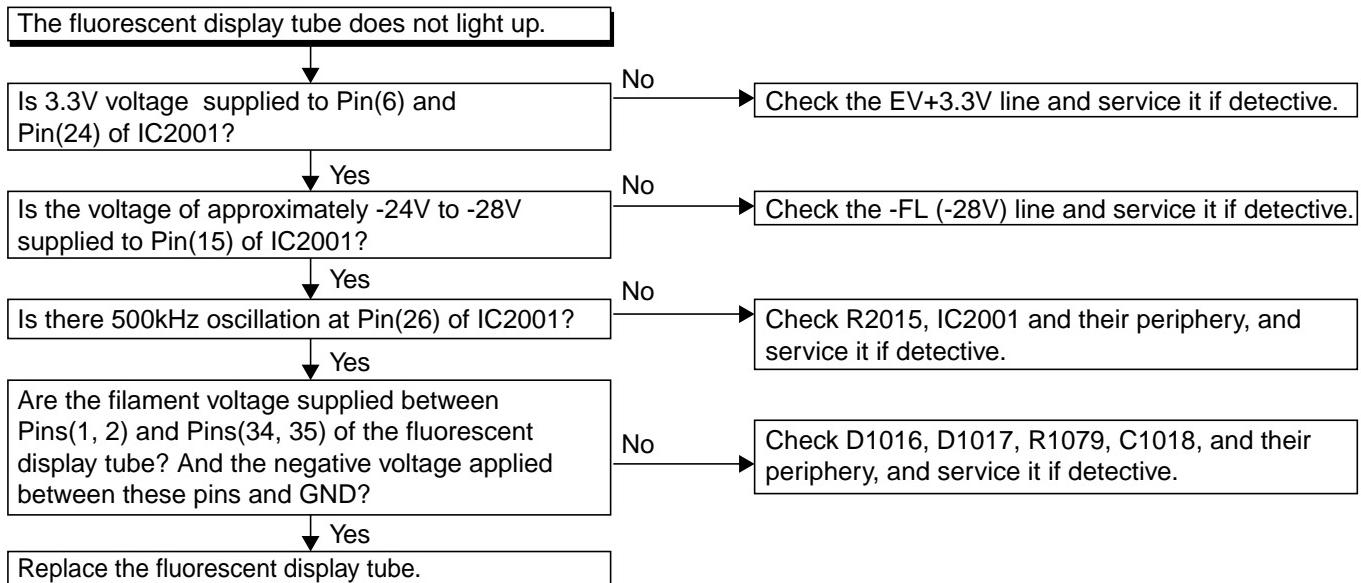
FLOW CHART NO.10



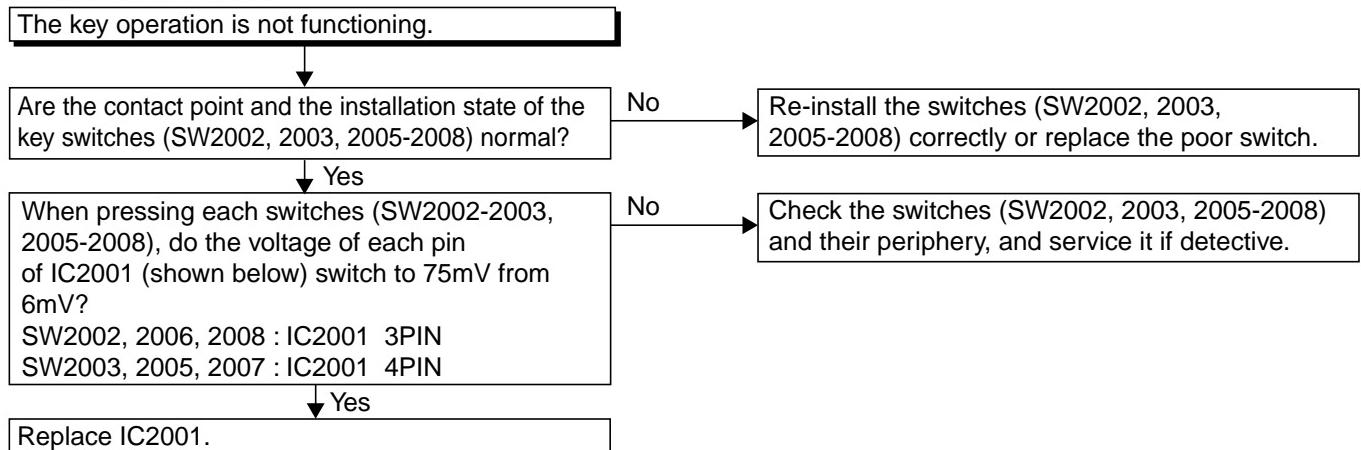
FLOW CHART NO.11



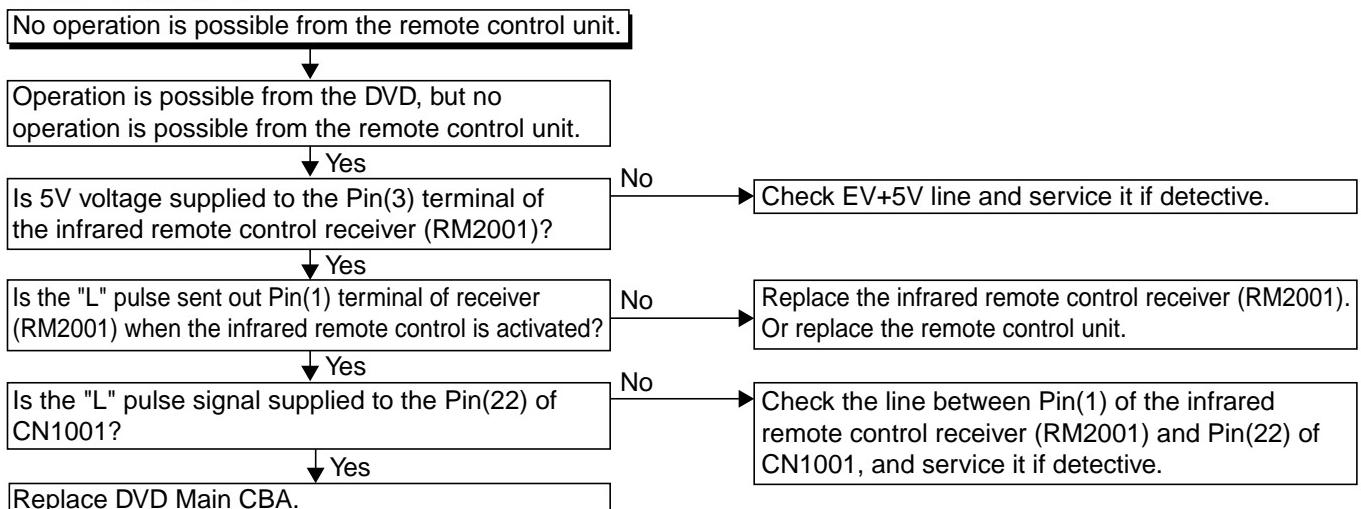
FLOW CHART NO.12



FLOW CHART NO.13

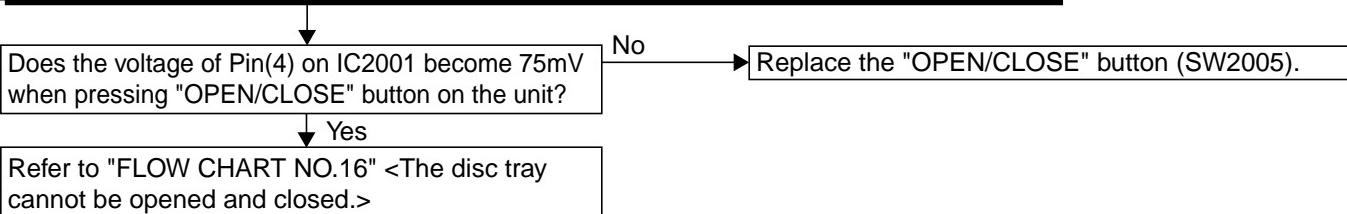


FLOW CHART NO.14



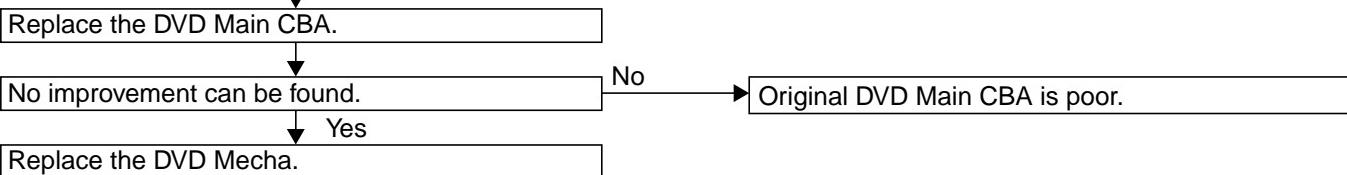
FLOW CHART NO.15

The disc tray cannot be opened and closed. (It can be done using the remote control unit.)



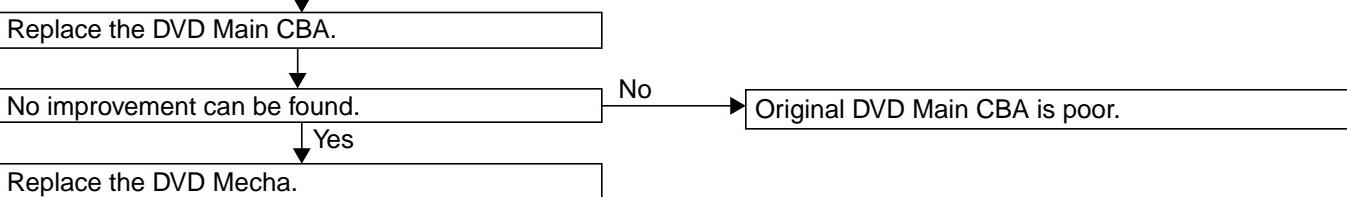
FLOW CHART NO.16

The disc tray cannot be opened and closed.



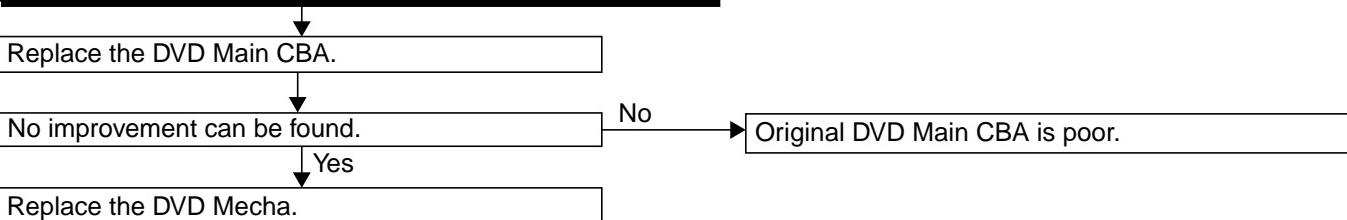
FLOW CHART NO.17

[No Disc] indicated. (When the focus error occurs.)



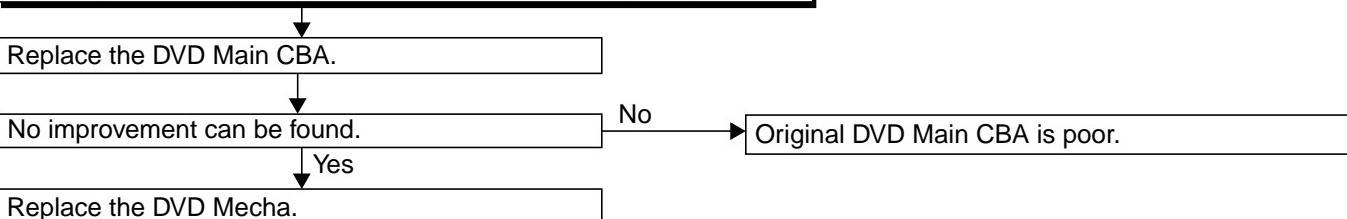
FLOW CHART NO.18

[No Disc] indicated. (When the focus servo is not functioning.)



FLOW CHART NO.19

[No Disc] indicated. (When the laser beam does not light up.)



FLOW CHART NO.20

Both functions of picture and sound do not operate normally.

Replace the DVD Main CBA.

No improvement can be found.

No

Original DVD Main CBA is poor.

Yes

Replace the DVD Mecha.

FLOW CHART NO.21

Picture does not appear normally.

Set the disc on the disc tray, and playback.

Are the video signals outputted to each pin of CN1601 on the AV CBA?

CN1601 1PIN S-Y
CN1601 9PIN S-C
CN1601 7PIN G
CN1601 5PIN B
CN1601 3PIN R

No

Replace the DVD Main CBA or DVD Mecha.

Yes

Are the video signals shown above inputted into each pin of IC1401?

IC1402 6PIN S-Y
IC1402 2PIN S-C
IC1402 16PIN G
IC1402 12PIN B
IC1402 14PIN R

No

Check the line between each pin of CN1601 and each pin of IC1401 on the AV CBA, and service it if defective.

CN1601 1PIN → IC1402 6PIN S-Y
CN1601 9PIN → IC1402 2PIN S-C
CN1601 7PIN → IC1402 16PIN G
CN1601 5PIN → IC1402 12PIN B
CN1601 3PIN → IC1402 14PIN R

Yes

Are the video signals outputted to each pin of IC1401?

IC1402 31PIN CVBS
IC1402 28PIN S-Y
IC1402 33PIN S-C
IC1402 19PIN G
IC1402 25PIN B
IC1402 22PIN R

No

Is 5V voltage applied to the pin(1, 24) of IC1401?

Yes

Replace IC1401.
Check P-ON+5V line and service it if defective.

No

Yes

Are the video signals outputted to the specific output terminal?

Are the luminance signals outputted to the S-OUT terminal (JK1401)?

No

Check the periphery of JK1401 from Pin (28) of IC1401 and service it if defective.

Are the chroma signals outputted to the S-OUT terminal (JK1401)?

No

Check the periphery of JK1401 from Pin (33) of IC1401 and service it if defective.

Are the component video signals outputted to the VIDEO OUT terminal (JK1404)?

No

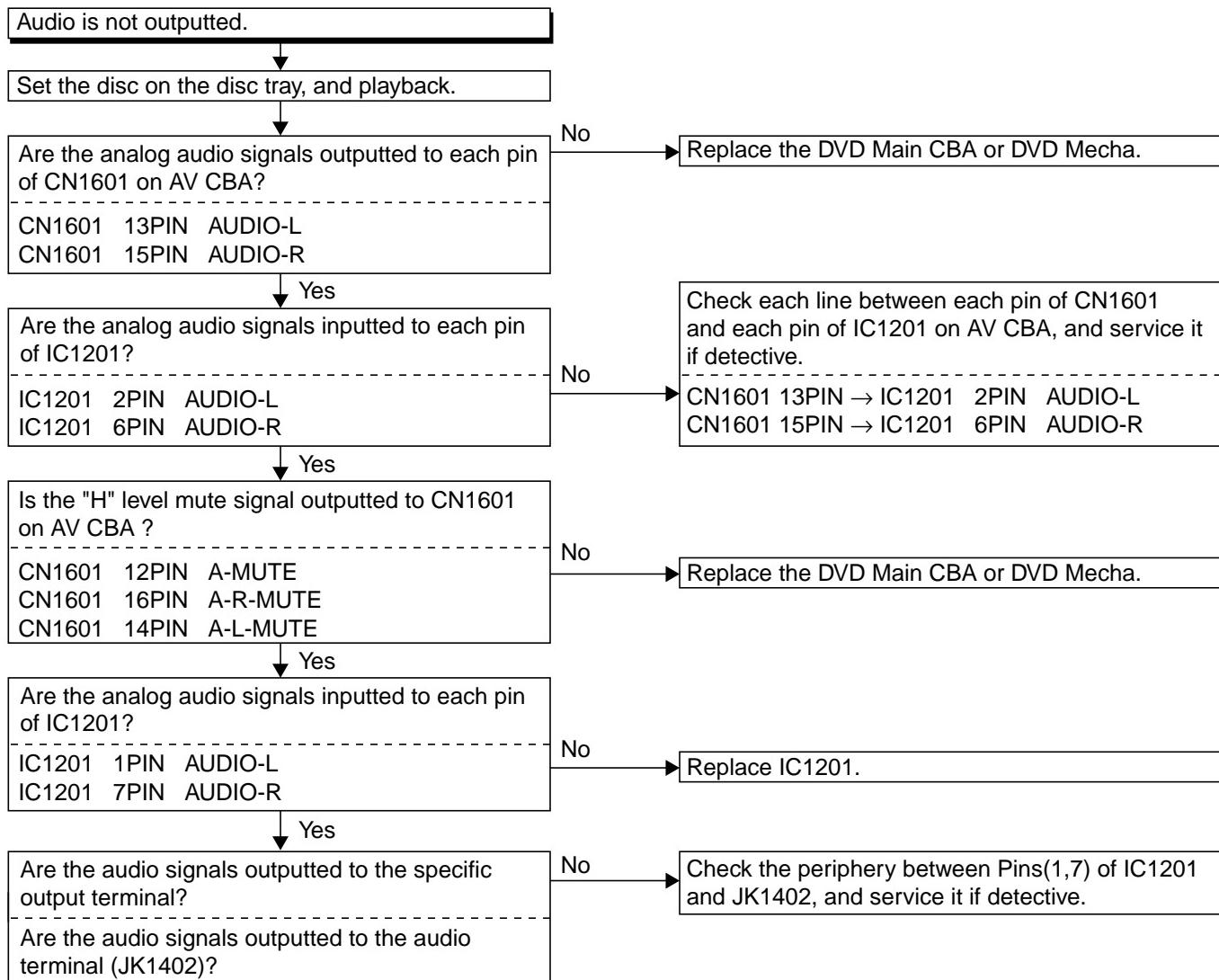
Check the periphery of JK1404 from Pins (19, 22, 25) of IC1401 and service it if defective.

Are the composite video signals outputted to the VIDEO OUT terminal (JK1404)?

No

Check the periphery of JK1404 from Pin(31) of IC1401 and service it if defective.

FLOW CHART NO.22



3-2 FIRMWARE RENEWAL MODE

3-2-1 How to Update the Firmware Version

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.

Fig. 3-2-1 appears on the screen and Fig. 3-2-2 appears on the VFD.

The DVD player can also enter the version up mode with the tray open. In this case, Fig. 3-2-1 will be shown on the screen while the tray is open.

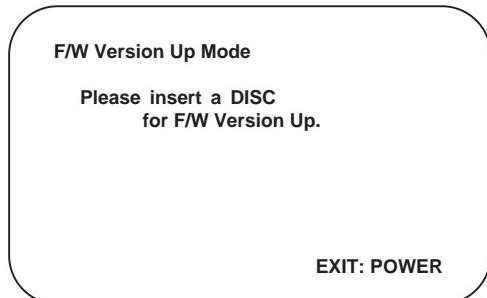


Fig. 3-2-1 Version Up Mode Screen



Fig. 3-2-2 VFD in Version Up Mode

3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. 3-2-3 appears on the screen and Fig. 3-2-4 appears on the VFD.

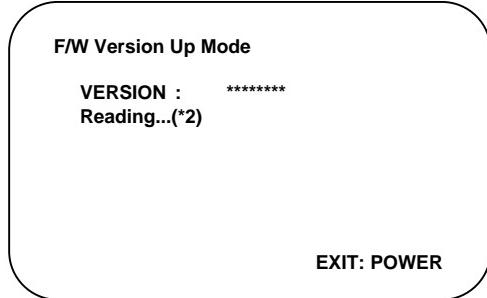


Fig. 3-2-3 Programming Mode Screen



Fig. 3-2-4 VFD in Programming Mode (Example)

The appearance shown in (*2) of Fig. 3-2-3 is described as follows:

No.	Appearance	State
1	Reading...	Sending files into the memory
2	Erasing...	Erasing previous version data
3	Programming...	Writing new version data

5. After programming is finished, the tray opens automatically. Fig. 3-2-5 appears on the screen and the checksum in (*3) of Fig. 3-2-5 appears on the VFD. (Fig. 3-2-6)
At this time, no buttons are available.

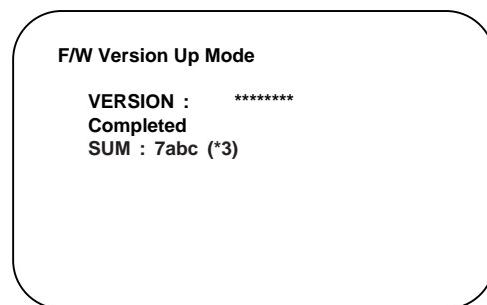


Fig. 3-2-5 Completed Program Mode Screen



Fig. 3-2-6 VFD upon Finishing the Programming Mode (Example)

6. Unplug the AC cord from the AC outlet. Then plug it again.
7. To finish this mode, press [POWER] button.

3-2-2 How to Verify the Firmware Version

1. After making sure that no disc is in unit, turn the power on.
2. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order. The B/E version appears on the VFD, and the F/E and B/E versions appear on TV screen.
3. Turn the power off to reset the unit.

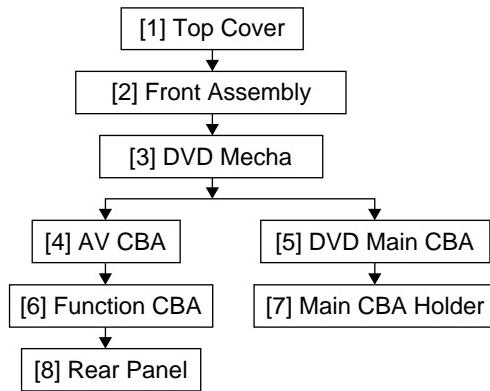
Note:

If the firmware has been changed, etc., we will use Service News, etc. to report on how to obtain new firmware data and create an upgraded disc.

4-1 CABINET DISASSEMBLY INSTRUCTIONS

4-1-1 Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



4-1-2 Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Cover	4-1-1	5(S-1)	-
[2]	Front Assembly	4-1-2	*2(L-1), Tray Panel, *2(L-2), *5(L-3), *3(L-4)	1-1 1-2 1-3 1-4 1-5 1-6
[3]	DVD Mecha	4-1-3, 4-1-4	*CN301, 3(S-2), *CN201	2 2-1 2-2 2-3 3
[4]	AV CBA	4-1-5	5(S-3), 3(S-4), *CN1001, *CN1601	-
[5]	DVD Main CBA	4-1-5	2(S-5)	-
[6]	Function CBA	4-1-5	Desolder	-
[7]	Main CBA Holder	4-1-6	(S-6)	-
[8]	Rear Panel	4-1-6	(S-7)	-

↓ ↓ ↓ ↓ ↓

(1) (2) (3) (4) (5)

- (1): Identification (location) No. of parts in the figures
- (2): Name of the part
- (3): Figure Number for reference
- (4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)
- (5): Refer to "Reference Notes."

Reference Notes

CAUTION 1: Locking Tabs (L-1), (L-2), (L-3) and (L-4) are fragile. Be careful not to break them.

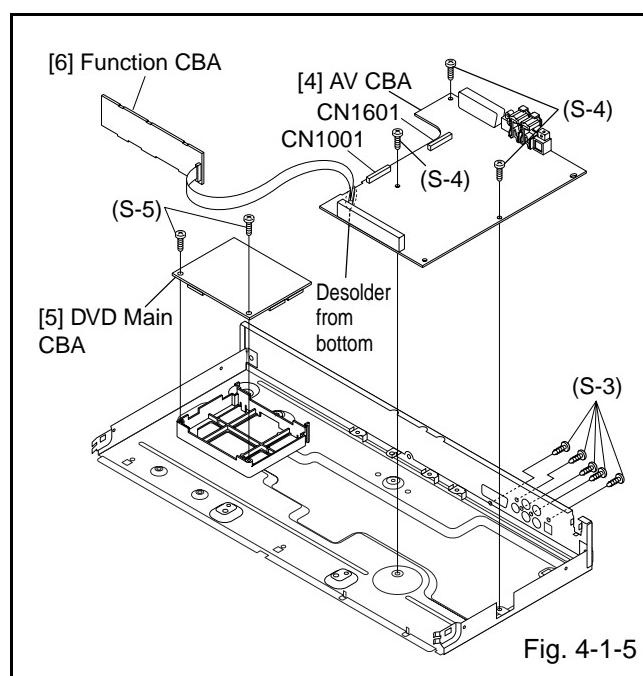
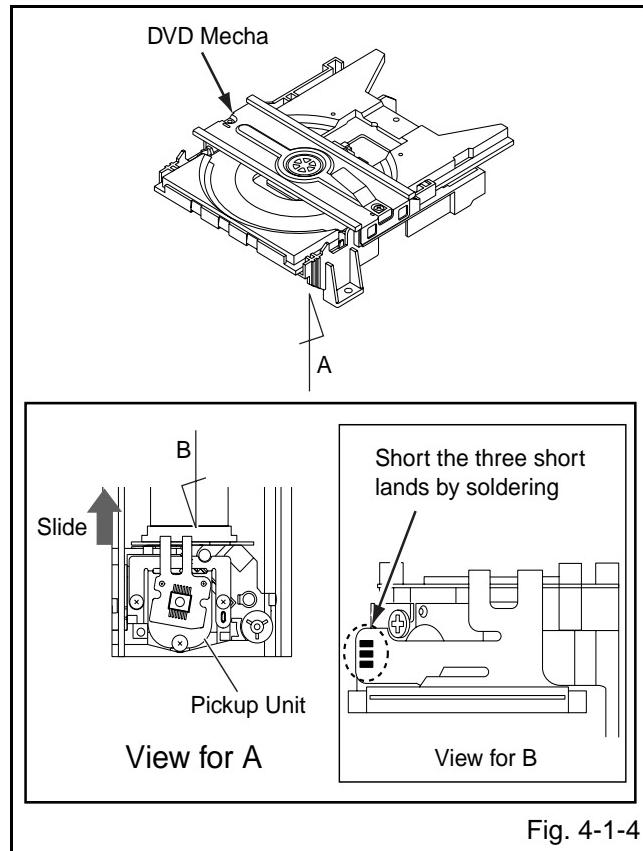
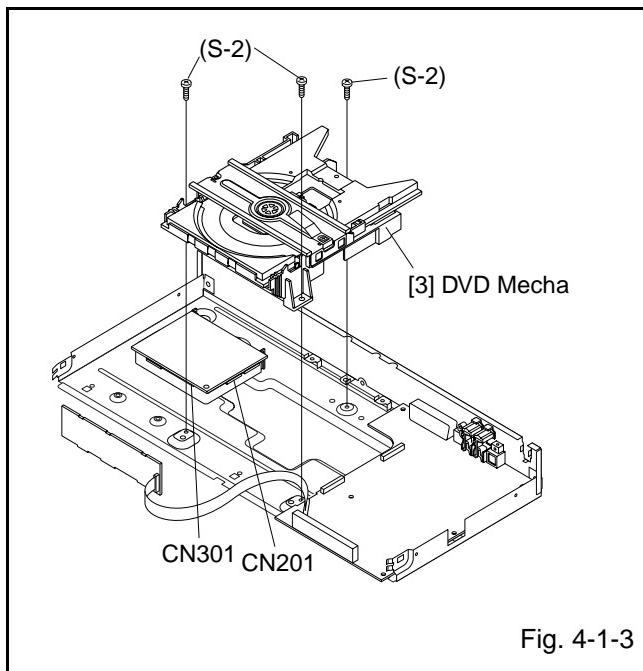
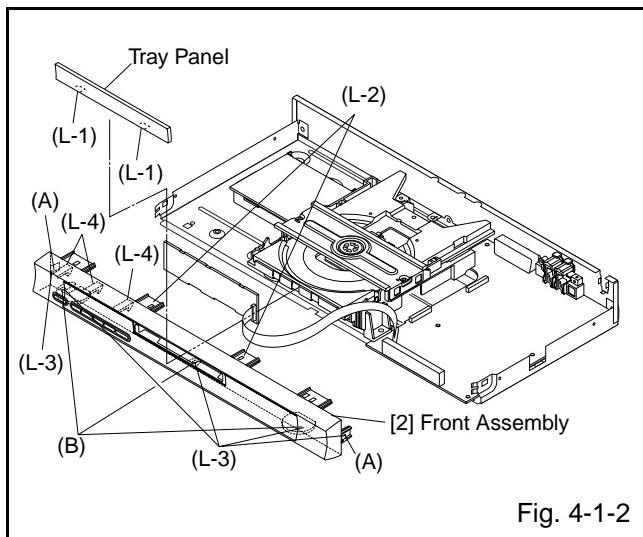
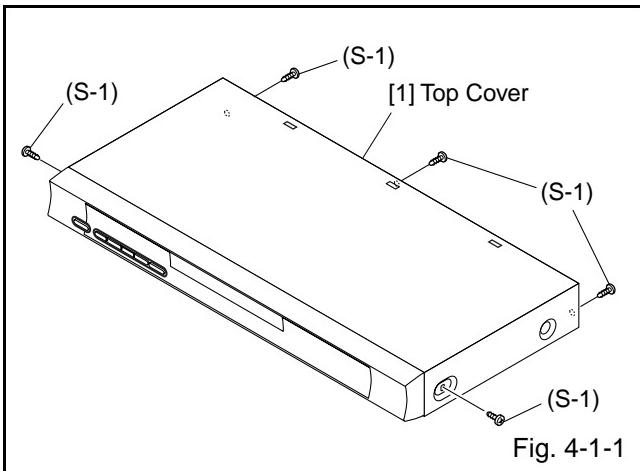
- 1-1. Connect the wall plug to an AC outlet and press the OPEN/CLOSE button to open the Tray.
- 1-2. Remove the Tray Panel by releasing two Locking Tabs (L-1).
- 1-3. Press the OPEN/CLOSE button again to close the Tray.
- 1-4. Press the POWER button to turn the power off, and unplug an AC cord.
- 1-5. Release two Locking Tabs (L-2). Then, release five Locking Tabs (L-3) (to do this, first release two Locking Tabs (A) at the side, and then three Locking Tabs (B) at the bottom.)
- 1-6. Release three Locking Tabs (L-4). Then remove the Front Assembly.

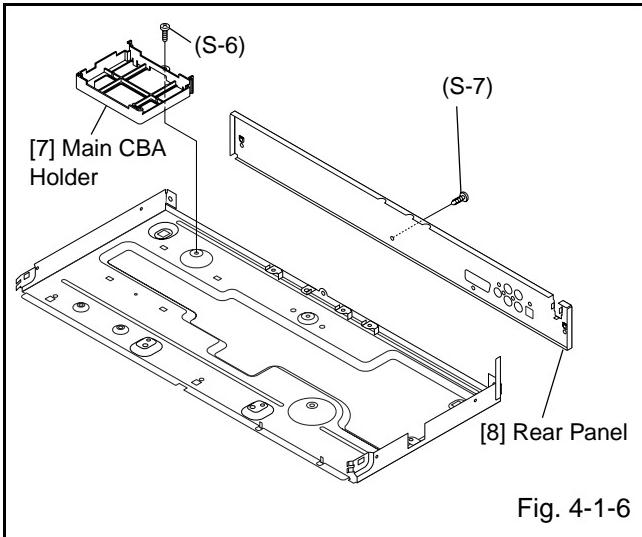
CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc, during unpacking or repair work.

To avoid damage of pickup follow next procedures.

- 2-1. Disconnect Connector (CN301). Remove three Screws (S-2) and lift the DVD Mecha. (Fig. 4-1-3)
- 2-2. Slide out the pickup unit as shown in Fig. 4-1-4.
- 2-3. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed. (Fig. 4-1-4)

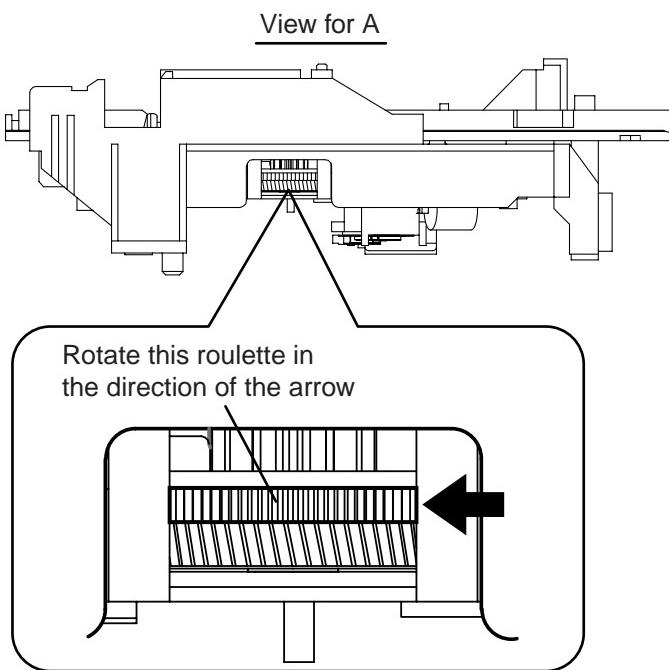
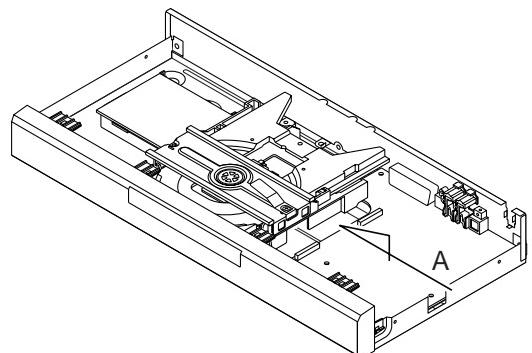
CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. 4-1-4)



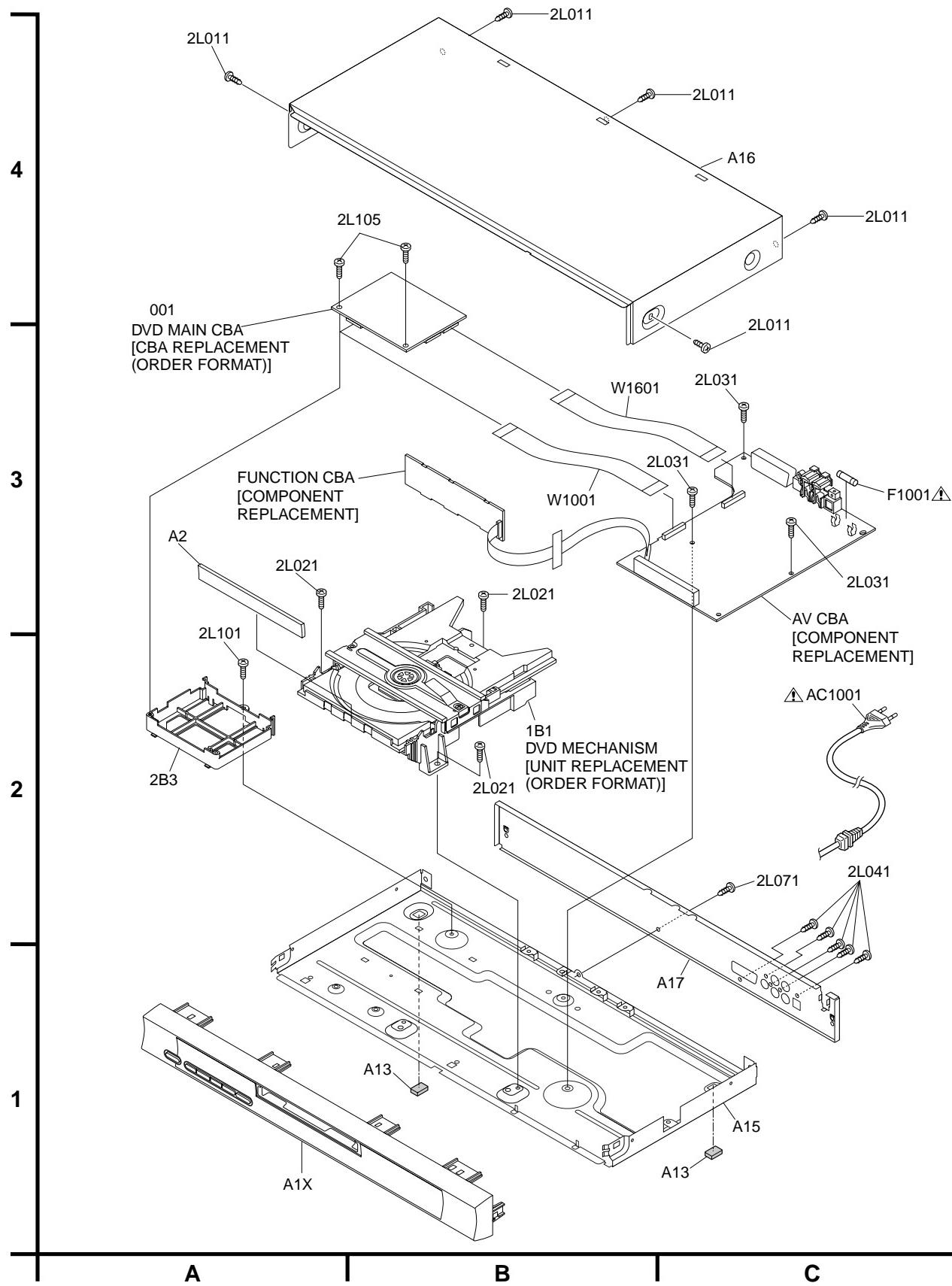


To Remove the Disc manually

1. Remove the Top Cover.
2. Rotate the roulette in the direction of the arrow as shown below.



5-1 EXPLODED VIEW



**THE UPDATED PARTS LIST
FOR THIS MODEL IS
AVAILABLE ON ESTA**

SCHEMATIC AND BLOCK DIAGRAMS/CBA'S

1 SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

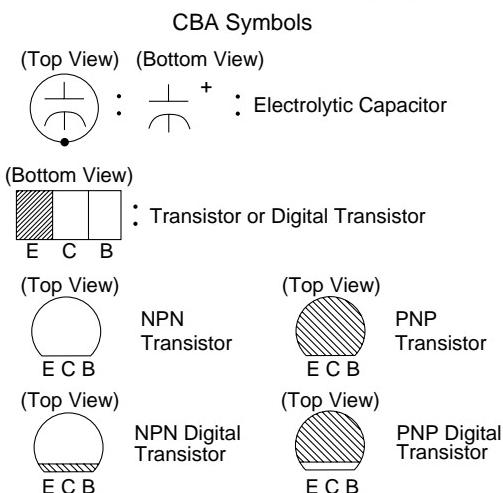
WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "▲" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

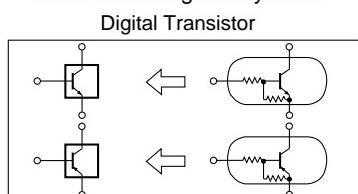
Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 - 80%	20°C	-10~+70°C

Capacitors and transistors are represented by the following symbols.



Schematic Diagram Symbols



Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All voltages are DC voltages unless otherwise specified.

Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication.....Ω K.....kΩ M.....MΩ
Power capacitance	No indication.....1/4W, 1/6W All capacitances other than the above are indicated in schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication.....μF P.....pF
Dielectric strength	No indication.....50V All dielectric strengths other than 50V are indicated in schematic diagrams.

[Coils]

Item	Indication
Value	μ.....μH m.....mH

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION:

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

2. CAUTION:

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.

If Main Fuse (F1001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

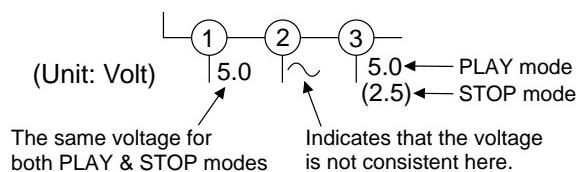
3. Note:

- (1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
- (2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors

- (1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
- (2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Voltage indications for PLAY mode on the schematics are as shown below:

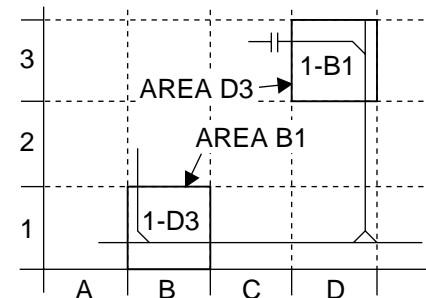


6. How to read converged lines

1-D3
↑
Distinction Area
Line Number
(1 to 3 digits)

Examples:

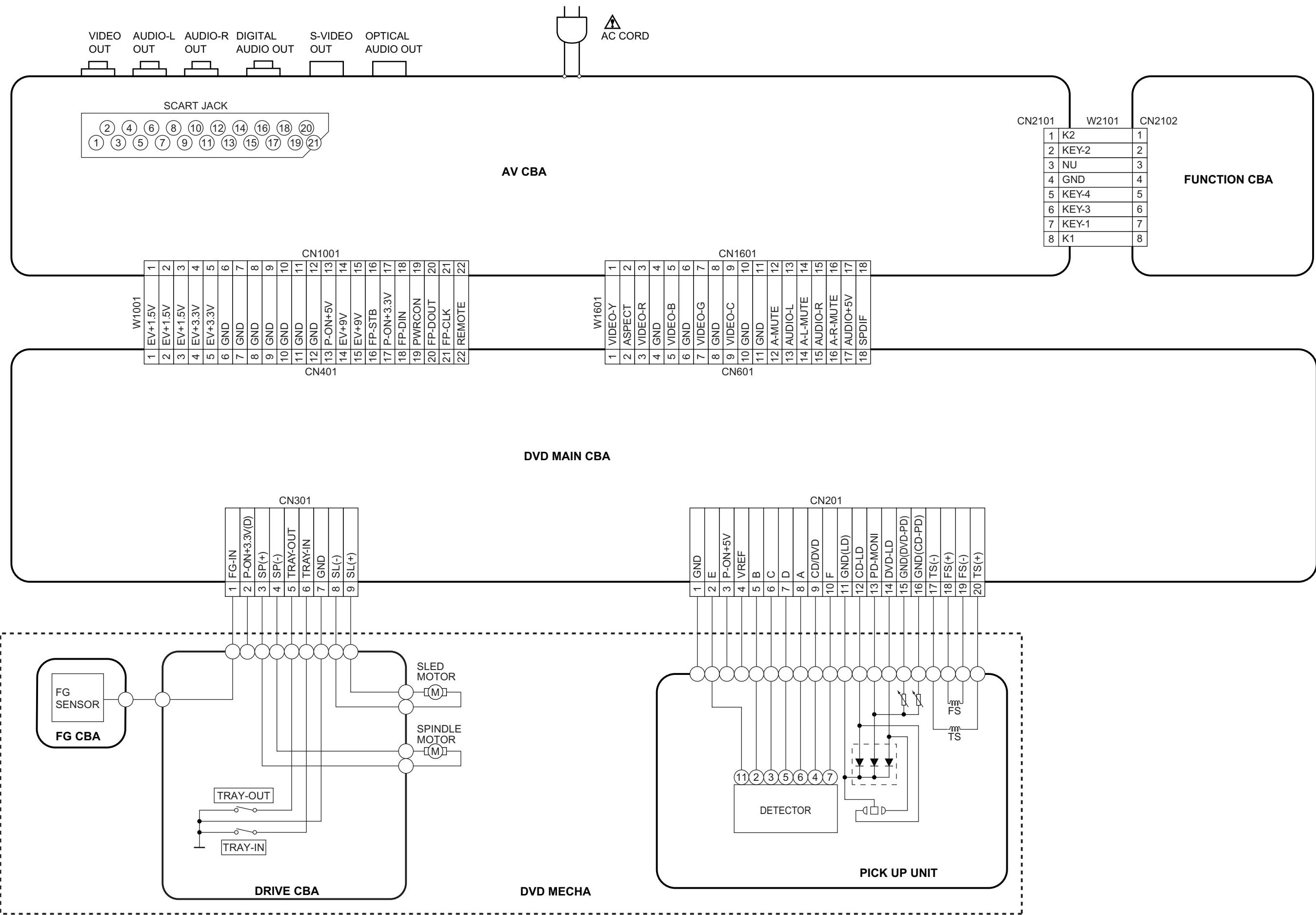
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



7. Test Point Information

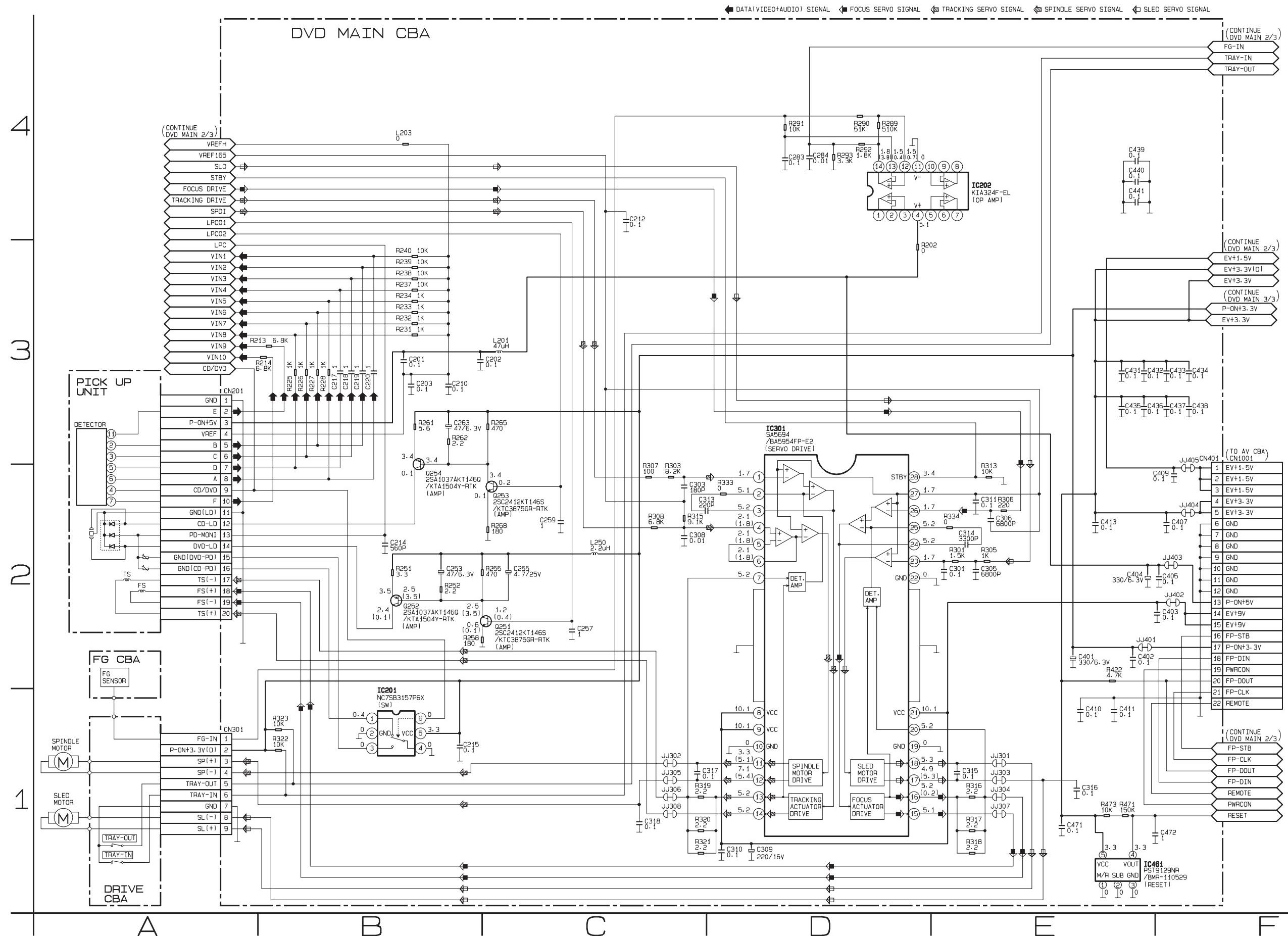
- : Indicates a test point with a jumper wire across a hole in the PCB.
- : Used to indicate a test point with a component lead on foil side.
- ▨ : Used to indicate a test point with no test pin.
- : Used to indicate a test point with a test pin.

2 WIRING DIAGRAM

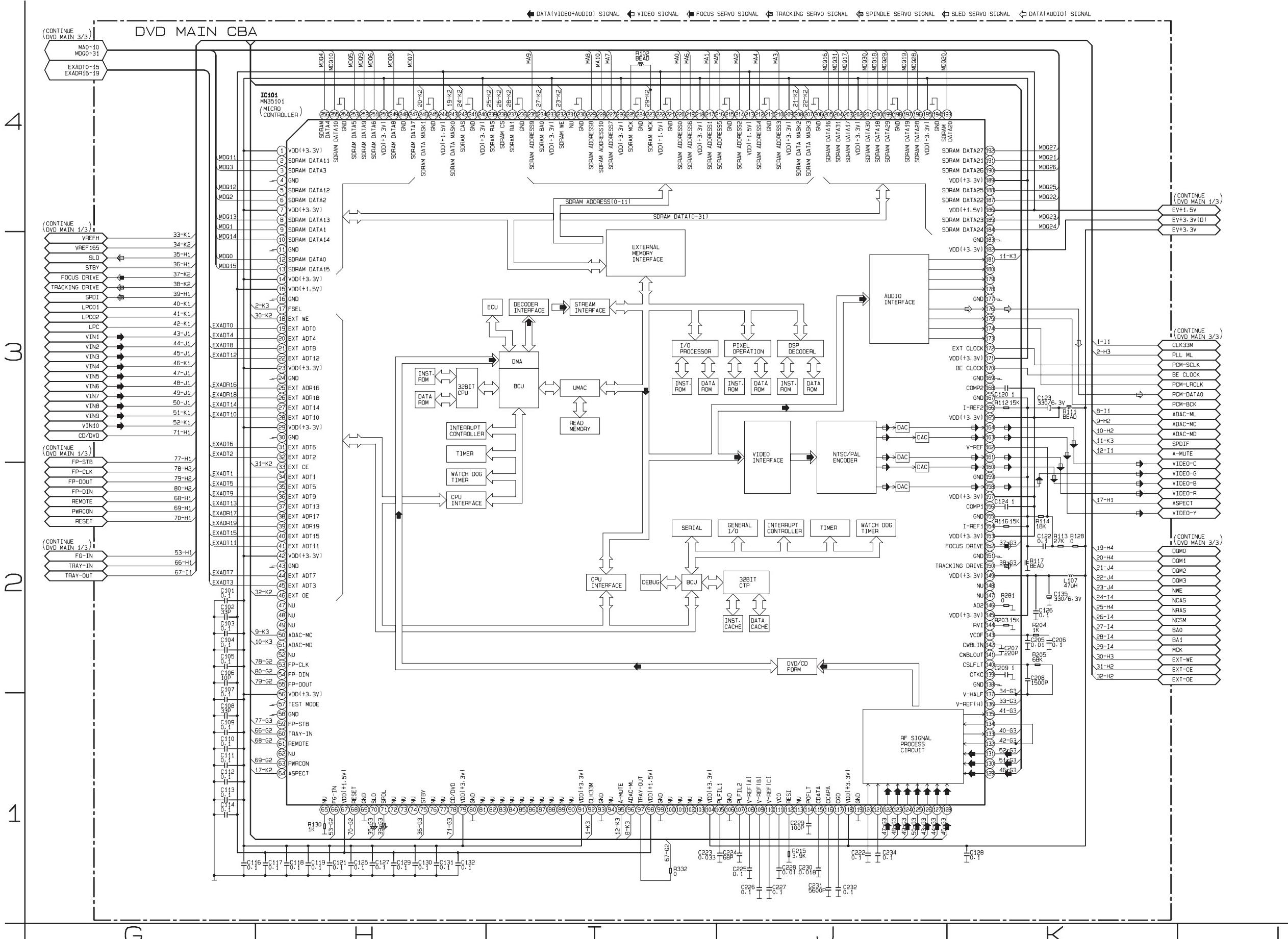


3 SCHEMATIC DIAGRAMS

3-1 DVD Main 1/3 Schematic Diagram



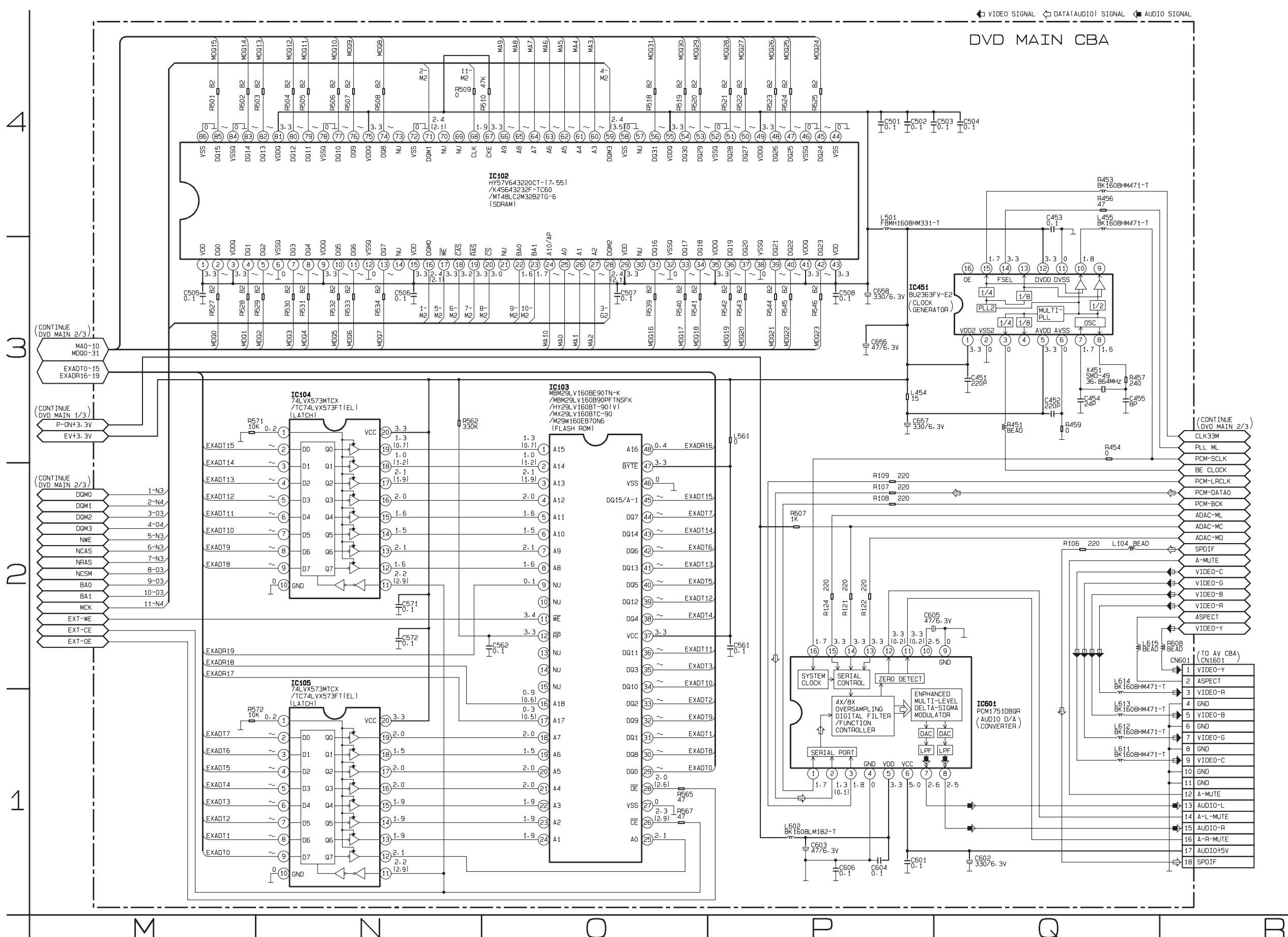
3-2 DVD Main 2/3 Schematic Diagram



IC101 VOLTAGE CHART

PIN.NO	PLAY	STOP																					
1	3.3	3.3	33	2.2	2.9	65	0.1	0.1	97	3.4	3.4	129	2.0	2.0	161	0.5	0.5	193	~	~	225	1.9	1.9
2	~	~	34	~	~	66	1.2	2.5	98	1.6	1.6	130	2.2	2.2	162	1.4	1.4	194	0	0	226	3.3	3.3
3	~	~	35	~	~	67	1.6	1.6	99	0	0	131	2.3	2.3	163	0.5	0.5	195	3.3	3.3	227	~	~
4	0	0	36	~	~	68	3.4	3.4	100	----	----	132	0.4	0.1	164	0.9	0.9	196	~	~	228	~	~
5	~	~	37	~	~	69	0	0	101	----	----	133	1.2	0.4	165	3.3	3.3	197	~	~	229	~	~
6	~	~	38	0.3	0.5	70	1.7	1.7	102	----	----	134	0.4	0.1	166	1.5	1.5	198	0	0	230	0	0
7	3.3	3.3	39	0.1	0.1	71	2.4	1.7	103	----	----	135	0.2	0.2	167	0	0	199	~	~	231	----	----
8	~	~	40	~	~	72	----	----	104	3.3	3.3	136	2.3	2.3	168	2.1	2.1	200	~	~	232	3.3	3.3
9	~	~	41	~	~	73	----	----	105	0.9	0.9	137	1.7	1.7	169	0	0	201	~	~	233	3.3	3.3
10	~	~	42	3.3	3.3	74	----	----	106	0	0	138	0	0	170	0.8	0.8	202	3.3	3.3	234	1.6	1.6
11	0	0	43	0	0	75	3.4	3.4	107	0.8	0.8	139	1.7	1.7	171	3.3	3.3	203	~	~	235	~	~
12	~	~	44	~	~	76	----	----	108	1.6	1.6	140	1.7	1.7	172	1.6	1.6	204	~	~	236	0	0
13	~	~	45	~	~	77	----	----	109	2.1	2.1	141	1.7	1.7	173	----	----	205	~	~	237	1.7	1.7
14	3.3	3.3	46	2.0	2.6	78	0.1	0.1	110	2.6	2.6	142	1.7	1.7	174	1.8	1.8	206	0	0	238	3.0	3.0
15	1.5	1.5	47	----	----	79	3.3	3.3	111	2.0	2.0	143	0.5	0.5	175	1.7	1.7	207	2.4	3.5	239	3.3	3.3
16	0	0	48	----	----	80	0	0	112	0.7	0.9	144	1.6	1.6	176	1.4	0.1	208	2.4	2.1	240	3.3	3.3
17	3.4	3.4	49	----	----	81	----	----	113	----	----	145	3.3	3.3	177	0	0	209	3.3	3.3	241	0	0
18	3.4	3.4	50	3.4	3.4	82	----	----	114	1.8	1.8	146	0	0	178	----	----	210	~	~	242	3.2	3.2
19	~	~	51	3.4	3.4	83	----	----	115	1.4	1.4	147	----	----	179	----	----	211	0	0	243	2.4	2.1
20	~	~	52	----	----	84	----	----	116	0.3	0.3	148	----	----	180	----	----	212	~	~	244	1.5	1.5
21	~	~	53	3.4	3.4	85	----	----	117	1.6	1.6	149	3.3	3.3	181	1.7	1.7	213	1.5	1.5	245	0	0
22	~	~	54	3.4	3.4	86	----	----	118	3.3	3.3	150	1.7	1.7	182	3.3	3.3	214	~	~	246	2.4	2.1
23	3.3	3.3	55	3.3	3.3	87	----	----	119	0	0	151	0	0	183	0	0	215	0	0	247	~	~
24	0	0	56	3.3	3.3	88	----	----	120	1.9	1.9	152	1.7	1.7	184	~	~	216	~	~	248	0	0
25	0.4	0.4	57	0	0	89	----	----	121	1.9	1.9	153	3.3	3.3	185	~	~	217	~	~	249	~	~
26	0.9	0.6	58	0	0	90	----	----	122	2.4	2.4	154	1.4	1.4	186	1.5	1.5	218	3.3	3.3	250	3.3	3.3
27	~	~	59	3.3	3.3	91	3.3	3.3	123	2.4	2.4	155	0	0	187	~	~	219	~	~	251	~	~
28	~	~	60	3.4	3.4	92	1.7	1.5	124	2.4	2.4	156	2.2	2.2	188	~	~	220	~	~	252	~	~
29	3.3	3.3	61	3.1	3.1	93	0	0	125	2.4	2.4	157	3.3	3.3	189	3.3	3.3	221	0	0	253	~	~
30	0	0	62	----	----	94	----	----	126	2.0	2.0	158	0.7	0.7	190	~	~	222	1.5	1.5	254	0	0
31	~	~	63	3.4	3.4	95	3.4	0.1	127	2.0	2.0	159	0	0	191	~	~	223	1.9	1.9	255	~	~
32	~	~	64	0.8	0.8	96	3.4	3.4	128	2.0	2.0	160	0.5	0.5	192	~	~	224	0	0	256	~	~

3-3 DVD Main 3/3 Schematic Diagram



3-4 AV 1/3 Schematic Diagram

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

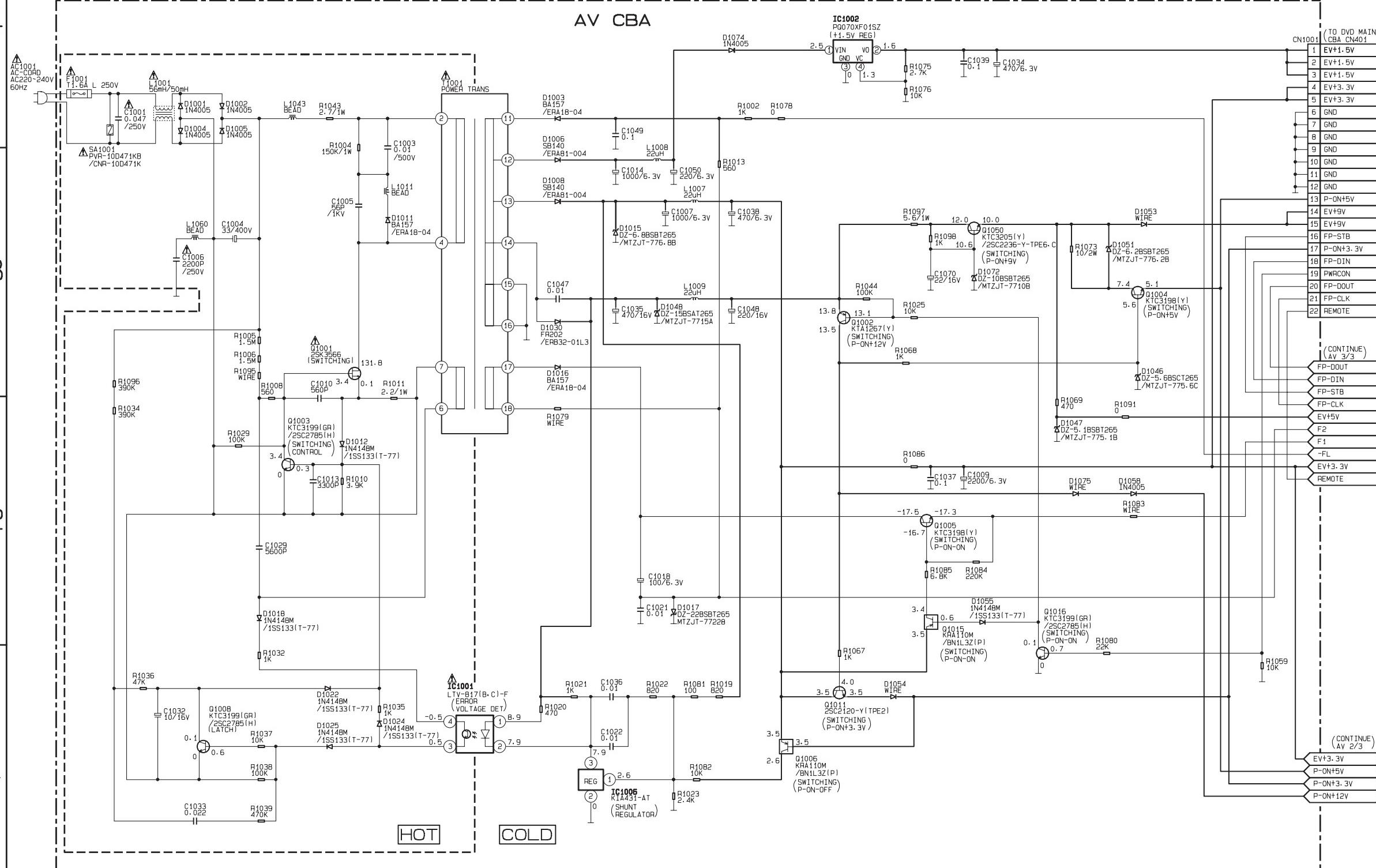
CAUTION

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

NOTE :

THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

4



3

2

1

A

B

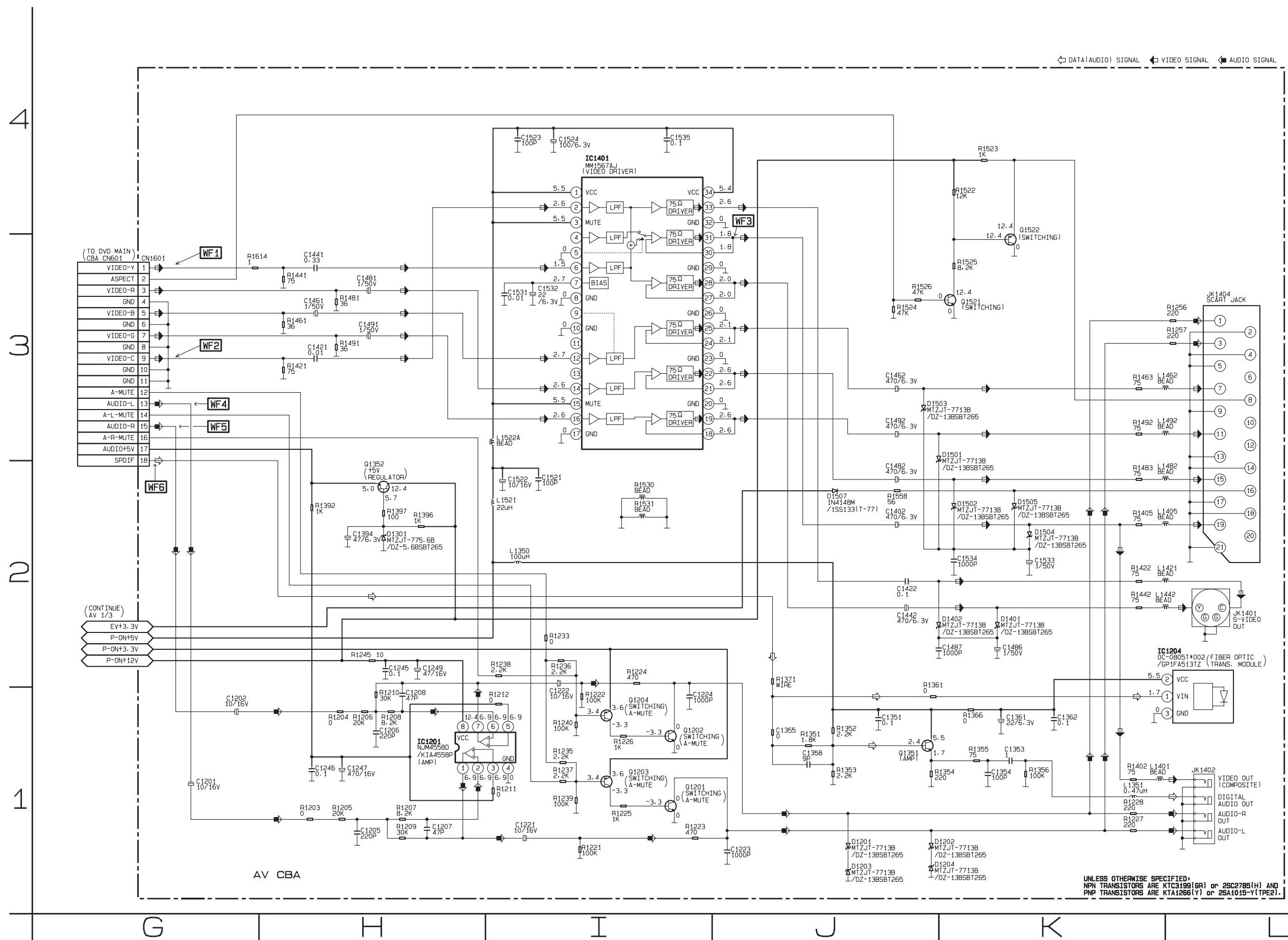
C

D

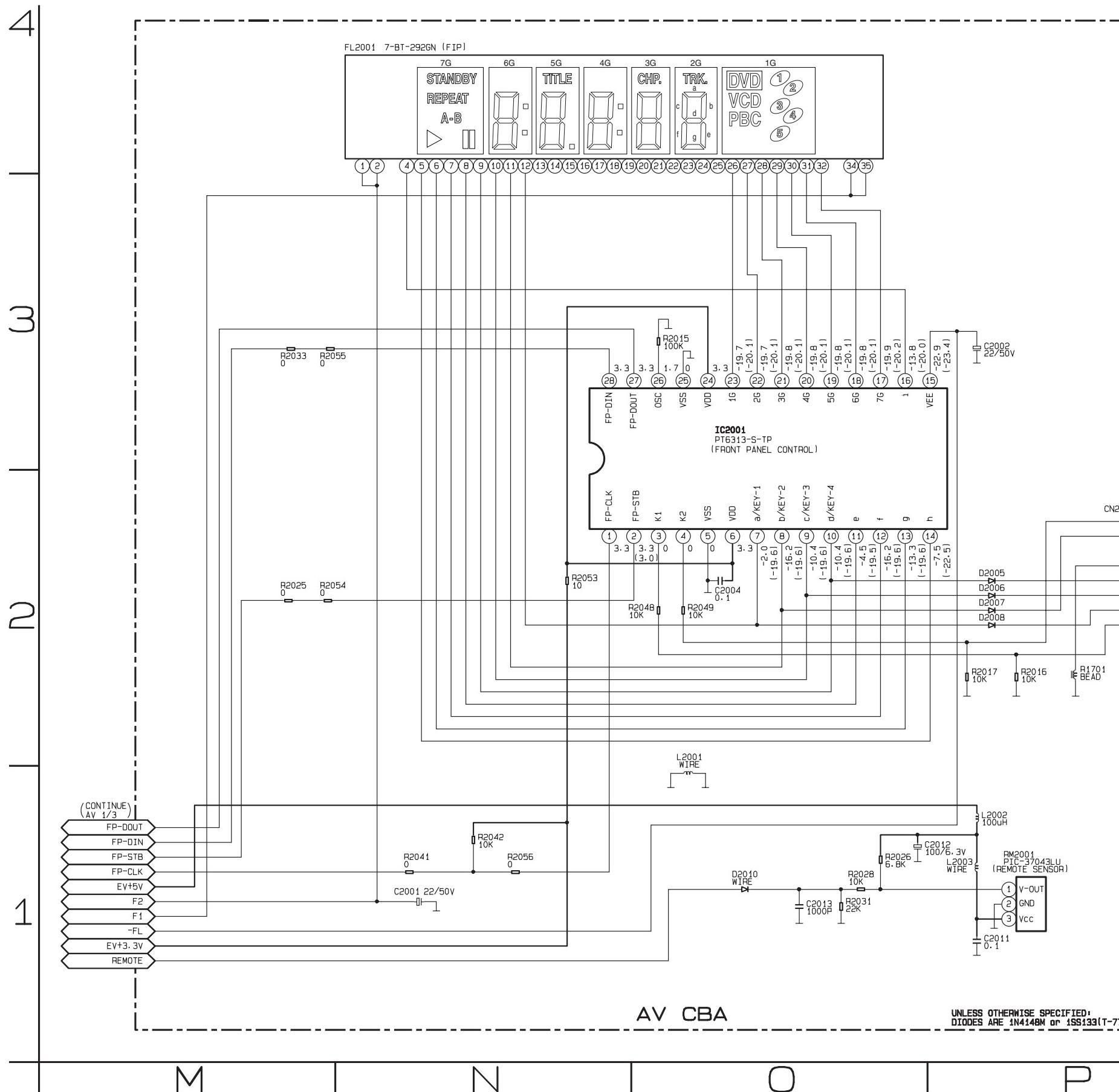
E

F

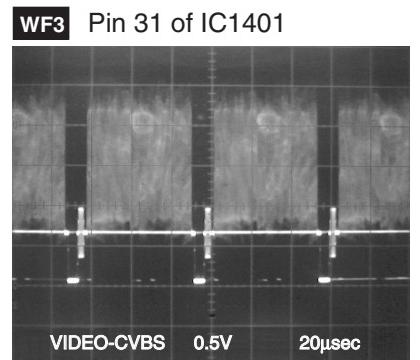
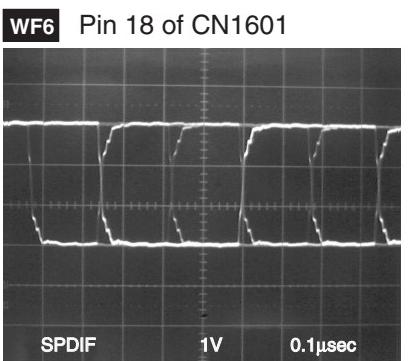
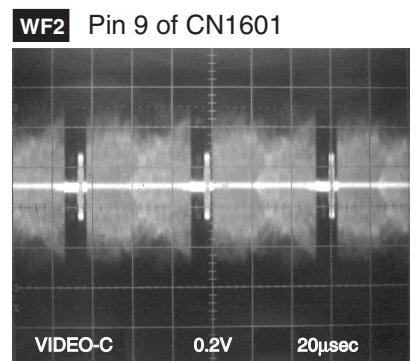
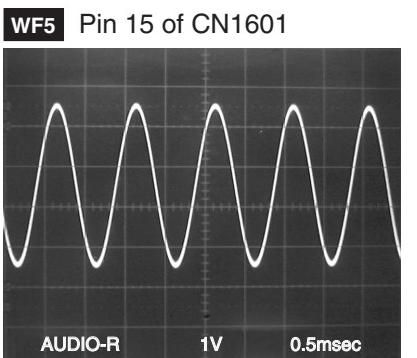
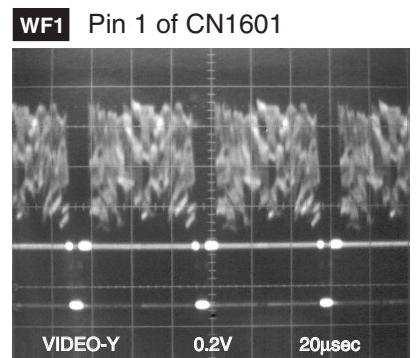
3-5 AV 2/3 Schematic Diagram



3-6 AV 3/3 & Function Schematic Diagram



4 WAVEFORMS

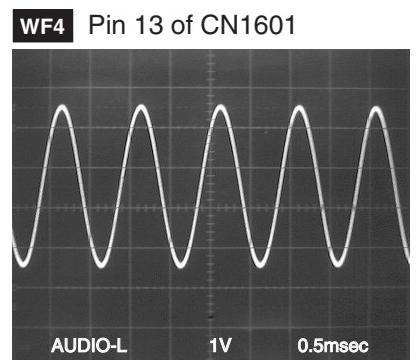


NOTE:

Input

CD: 1kHz PLAY
(WF4~WF6)

DVD: POWER ON (STOP) MODE
(WF1~WF3)



5 CIRCUIT BOARD DIAGRAMS

5-1 AV CBA Top View

CAUTION !

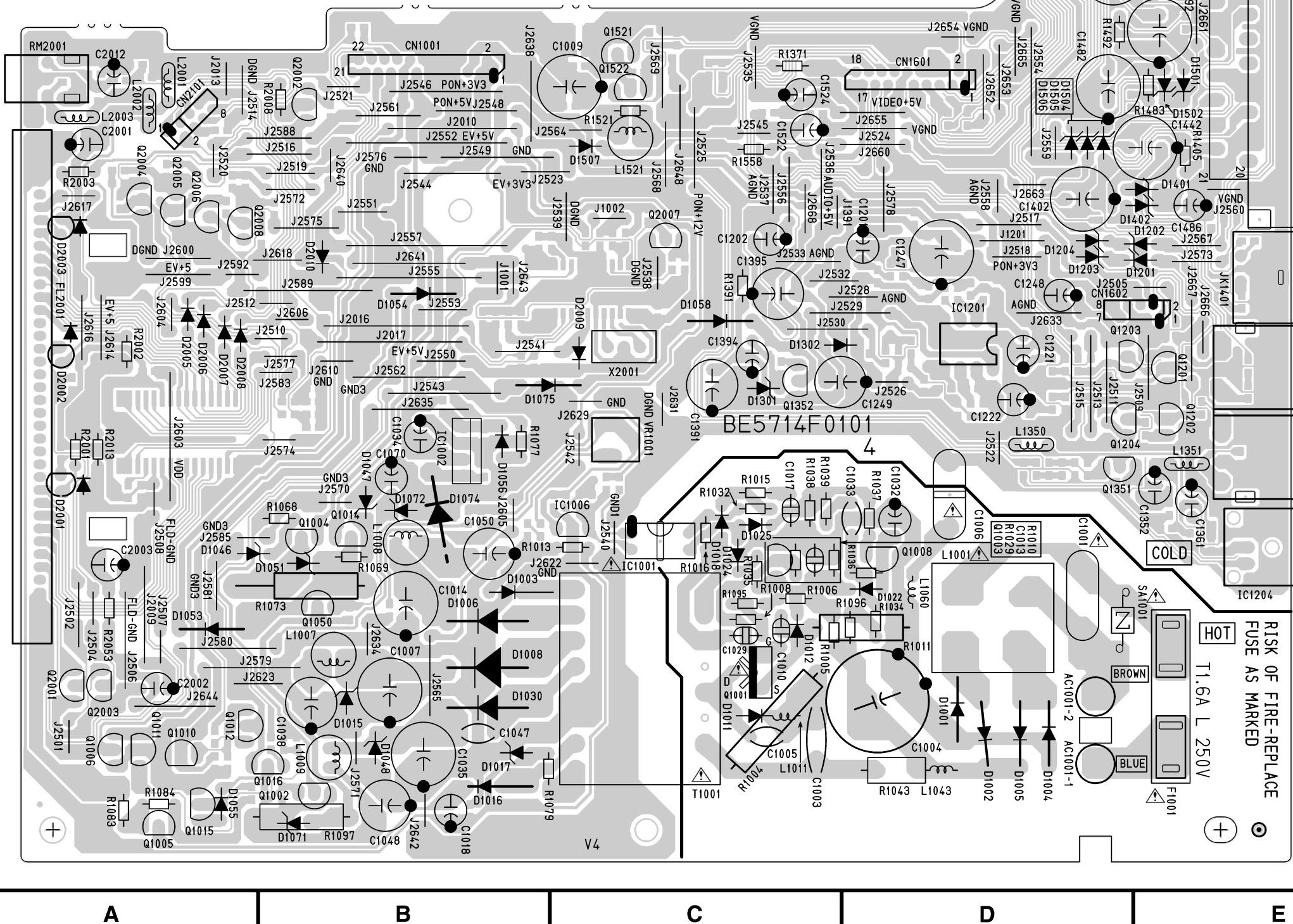
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

CAUTION

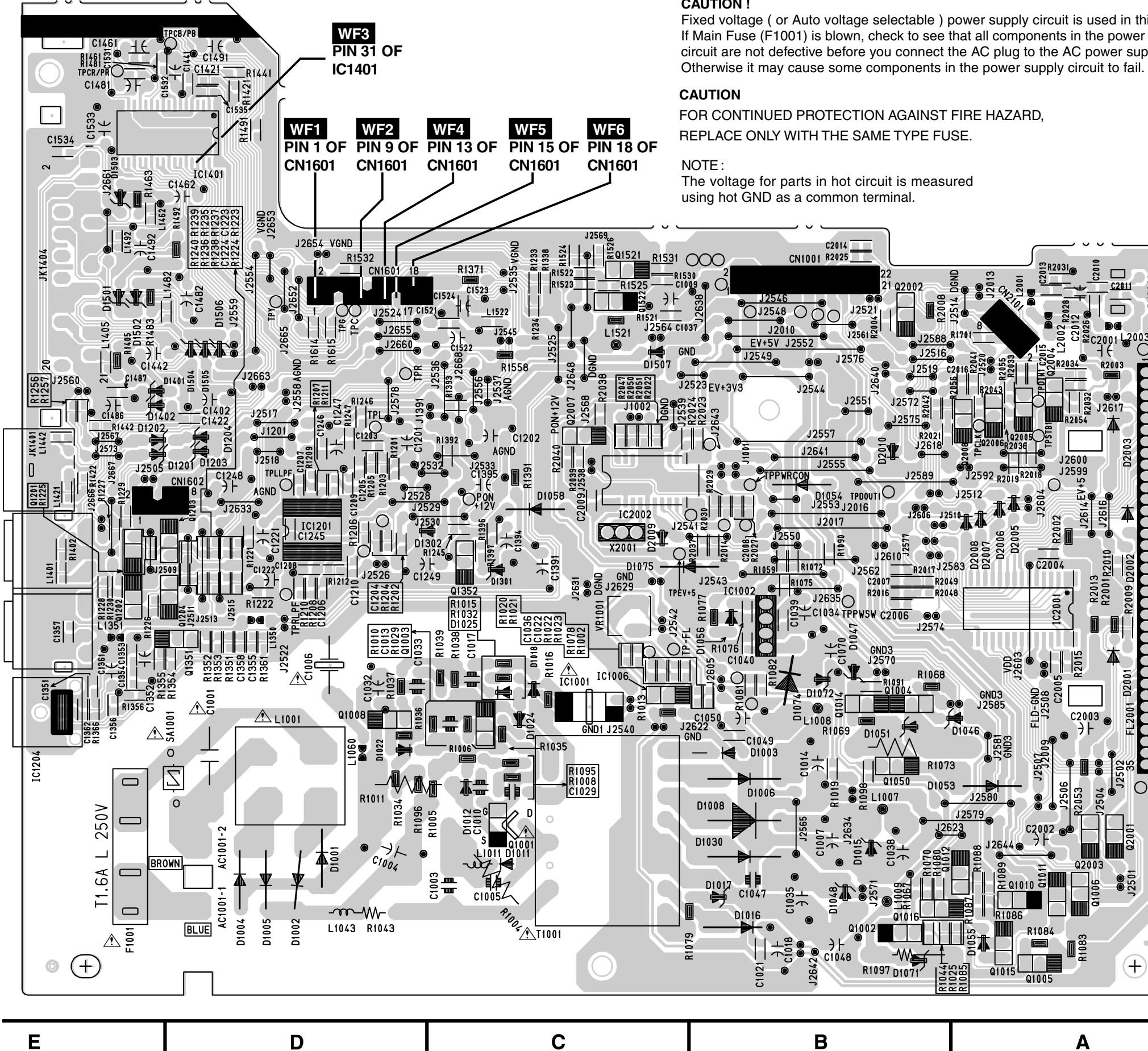
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

NOTE :

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

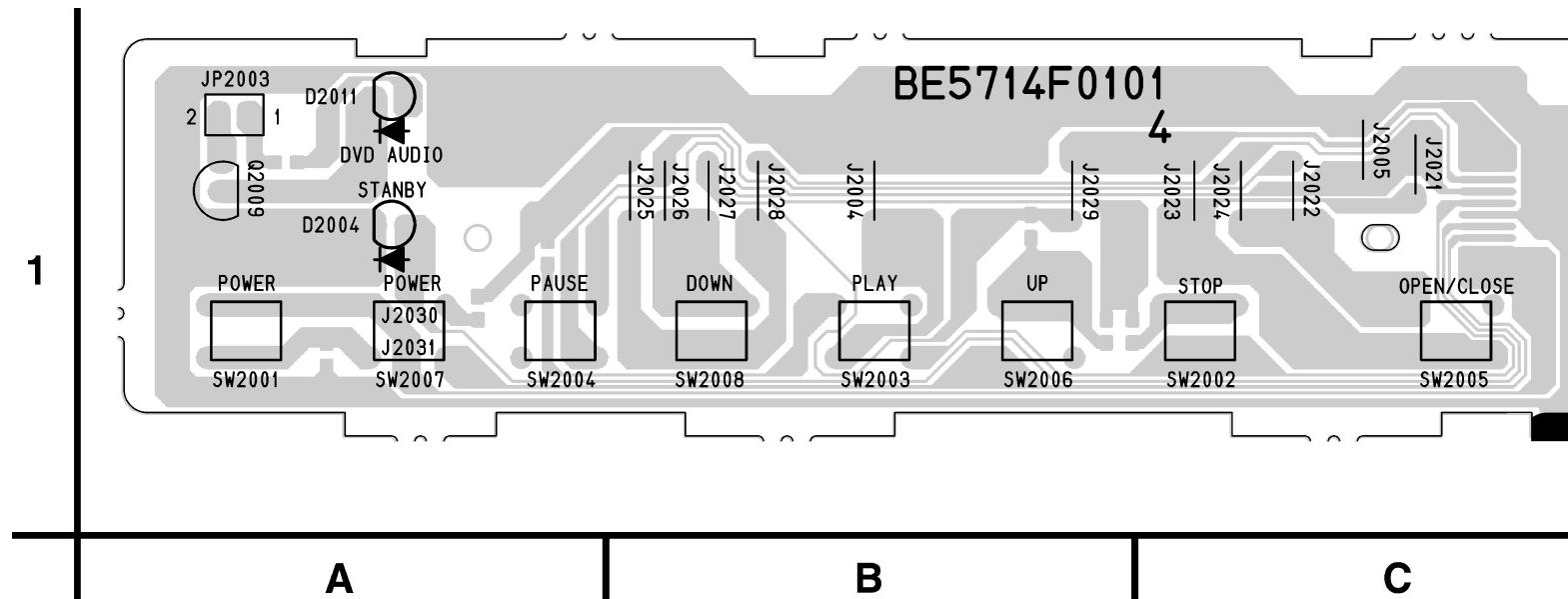


5-2 AV CBA Bottom View

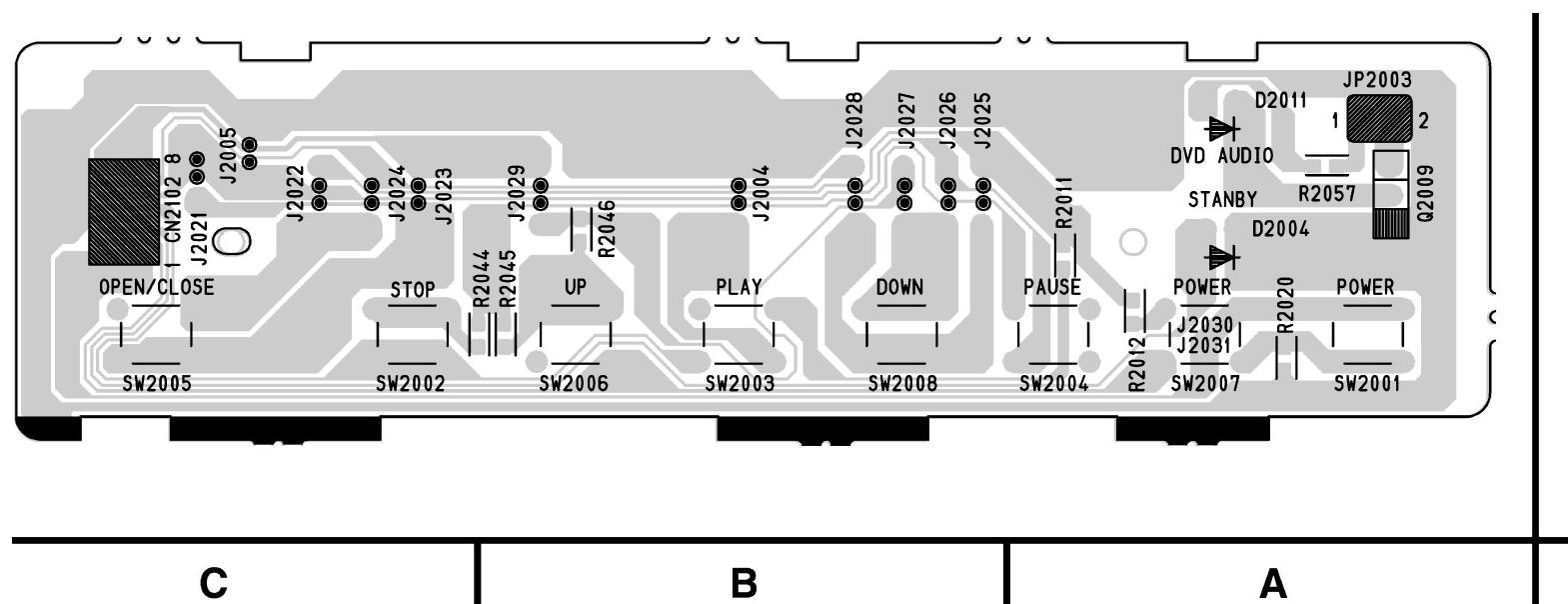


5-3 Function CBA Top/Bottom View

FUNCTION CBA Top View

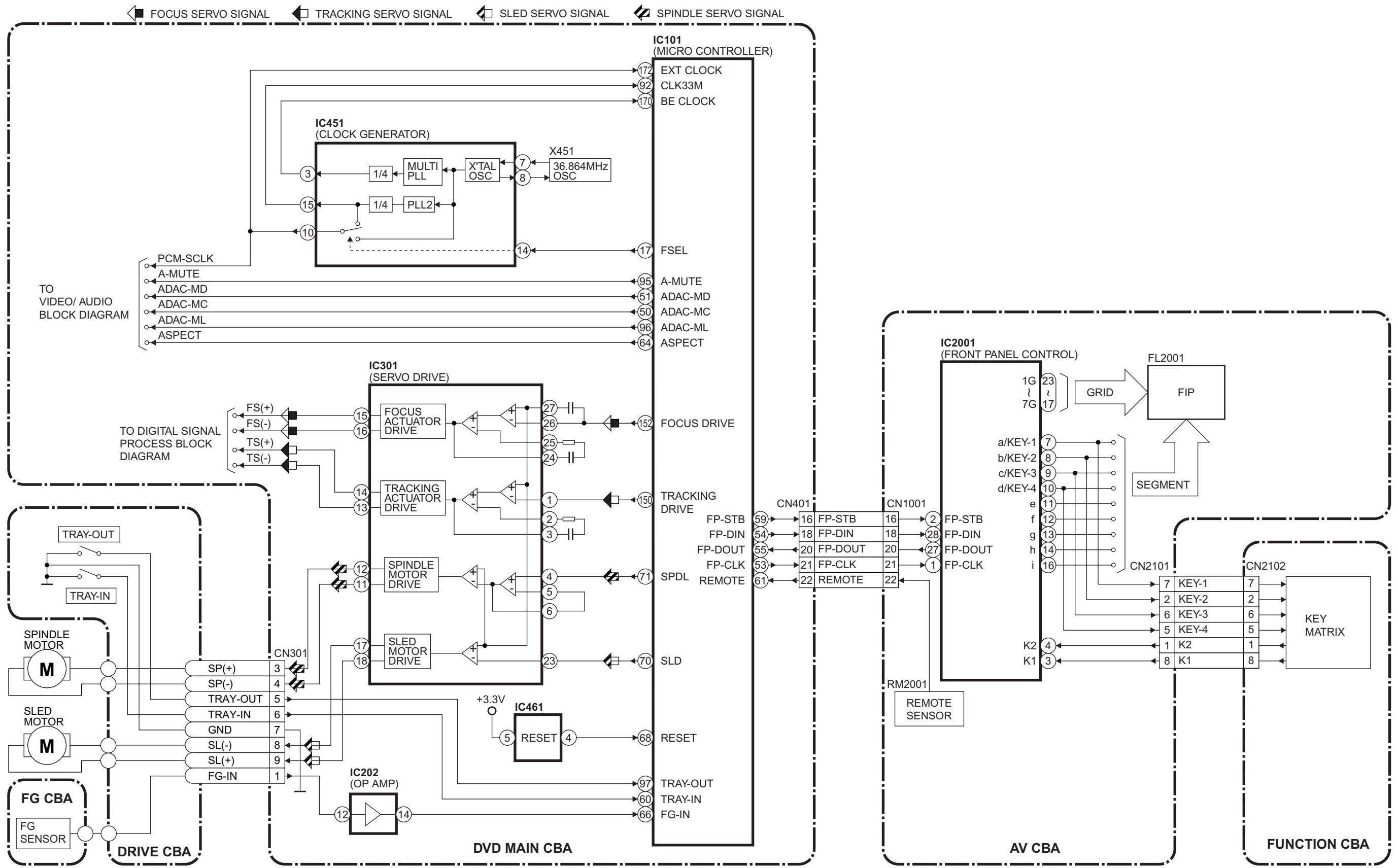


FUNCTION CBA Bottom View

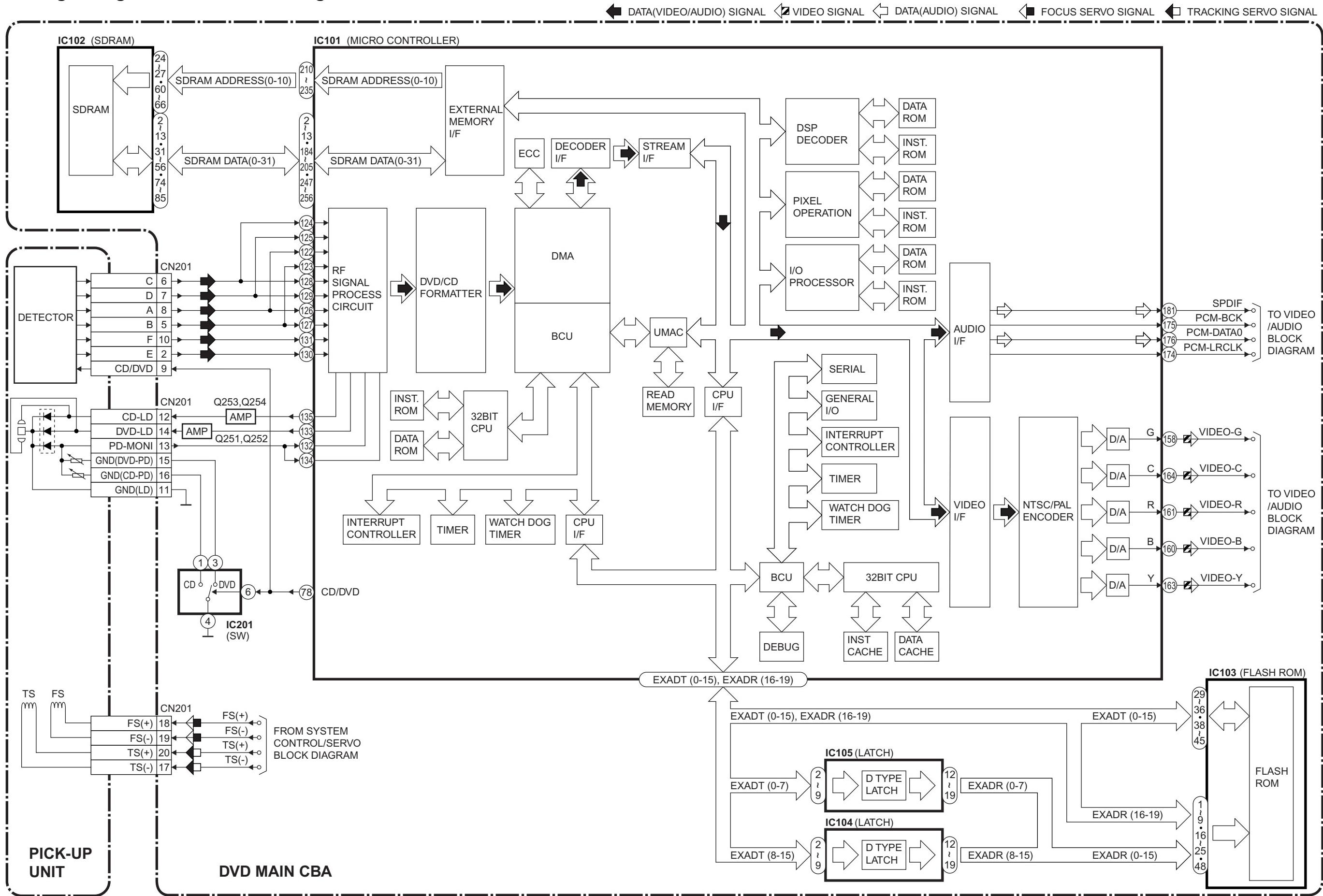


6 BLOCK DIAGRAMS

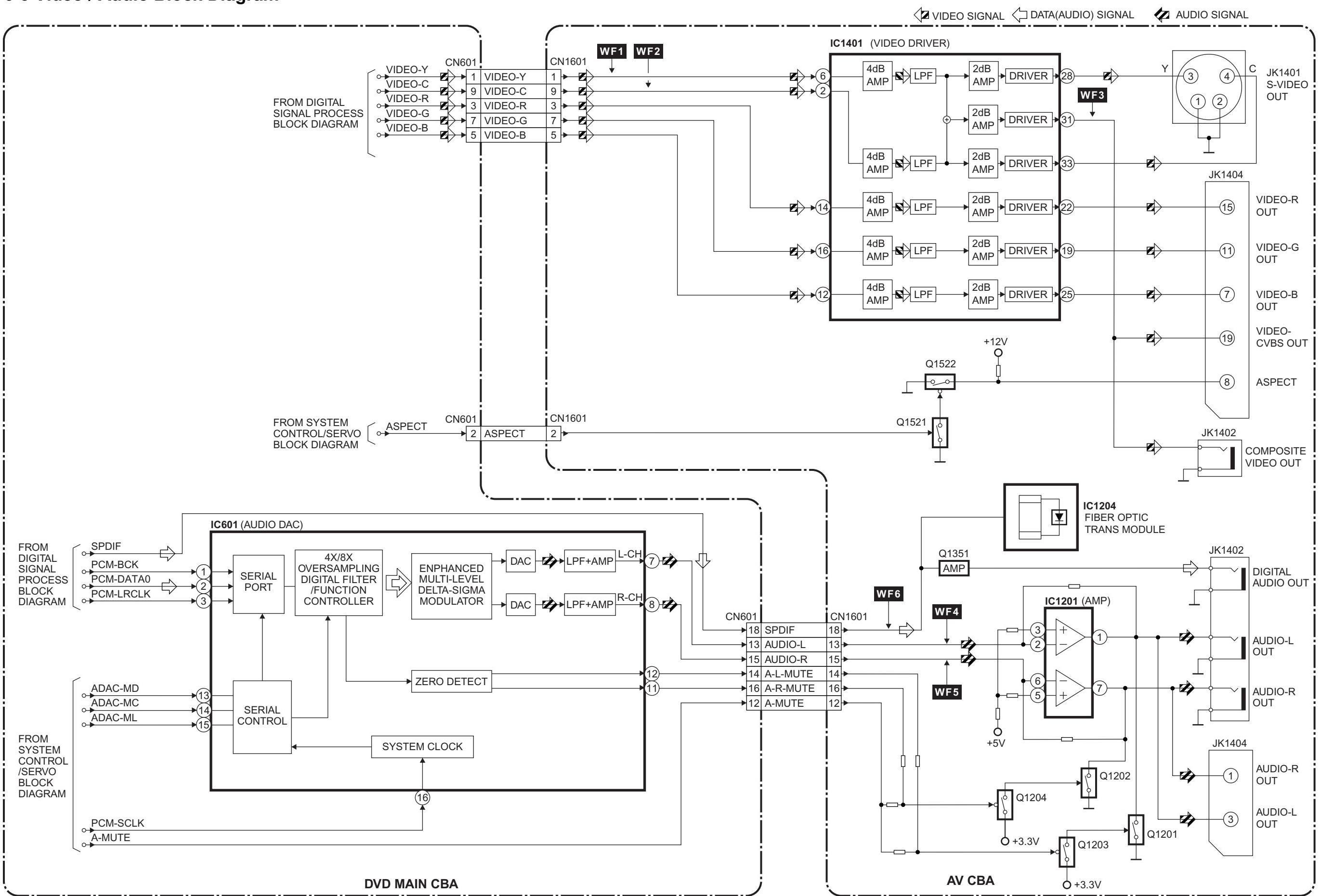
6-1 System Control/Servo Block Diagram



6-2 Digital Signal Process Block Diagram



6-3 Video / Audio Block Diagram



6-4 Power Supply Block Diagram

CAUTION !

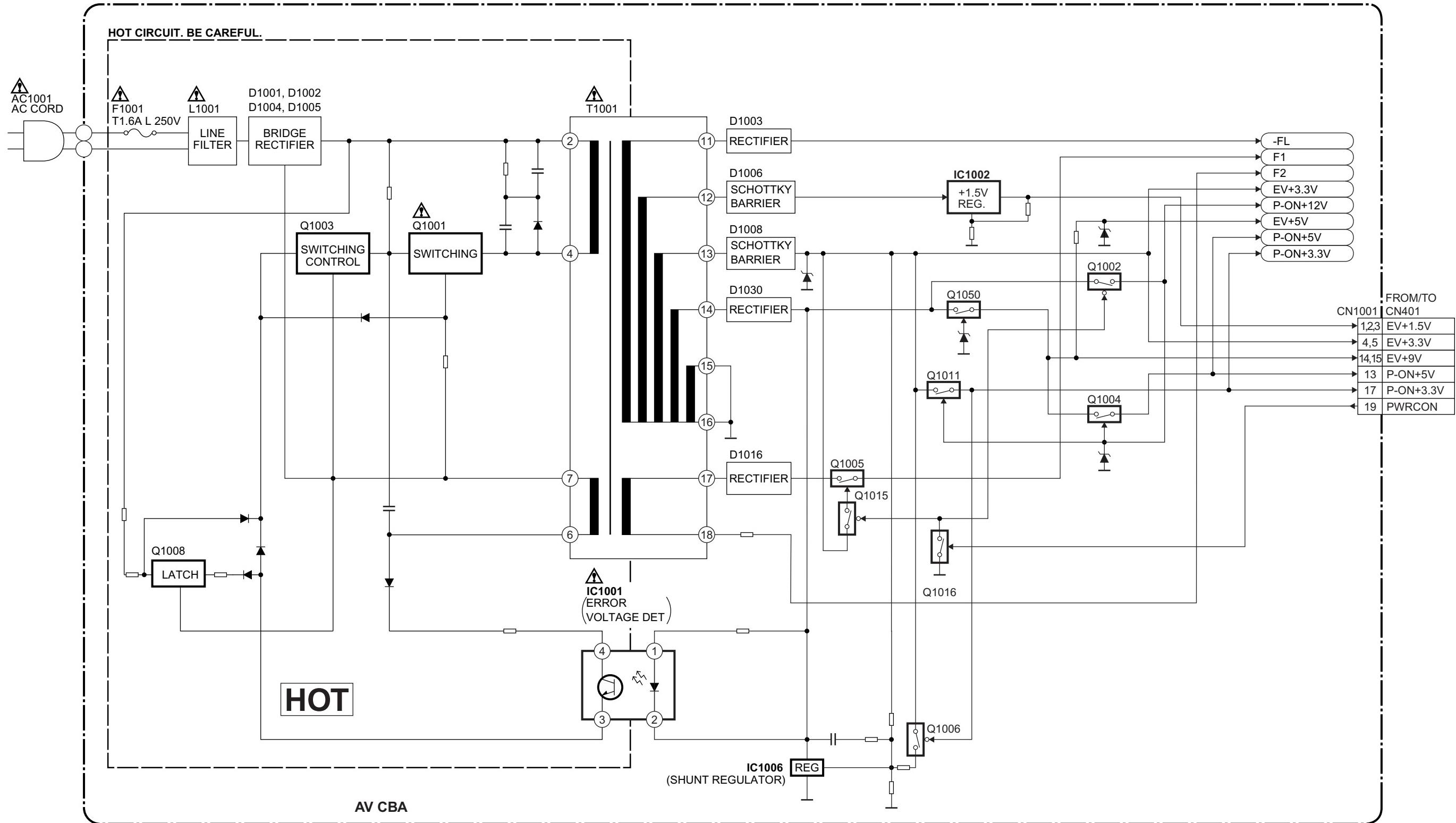
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
 If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
 Otherwise it may cause some components in the power supply circuit to fail.

CAUTION

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
 REPLACE ONLY WITH THE SAME TYPE FUSE.

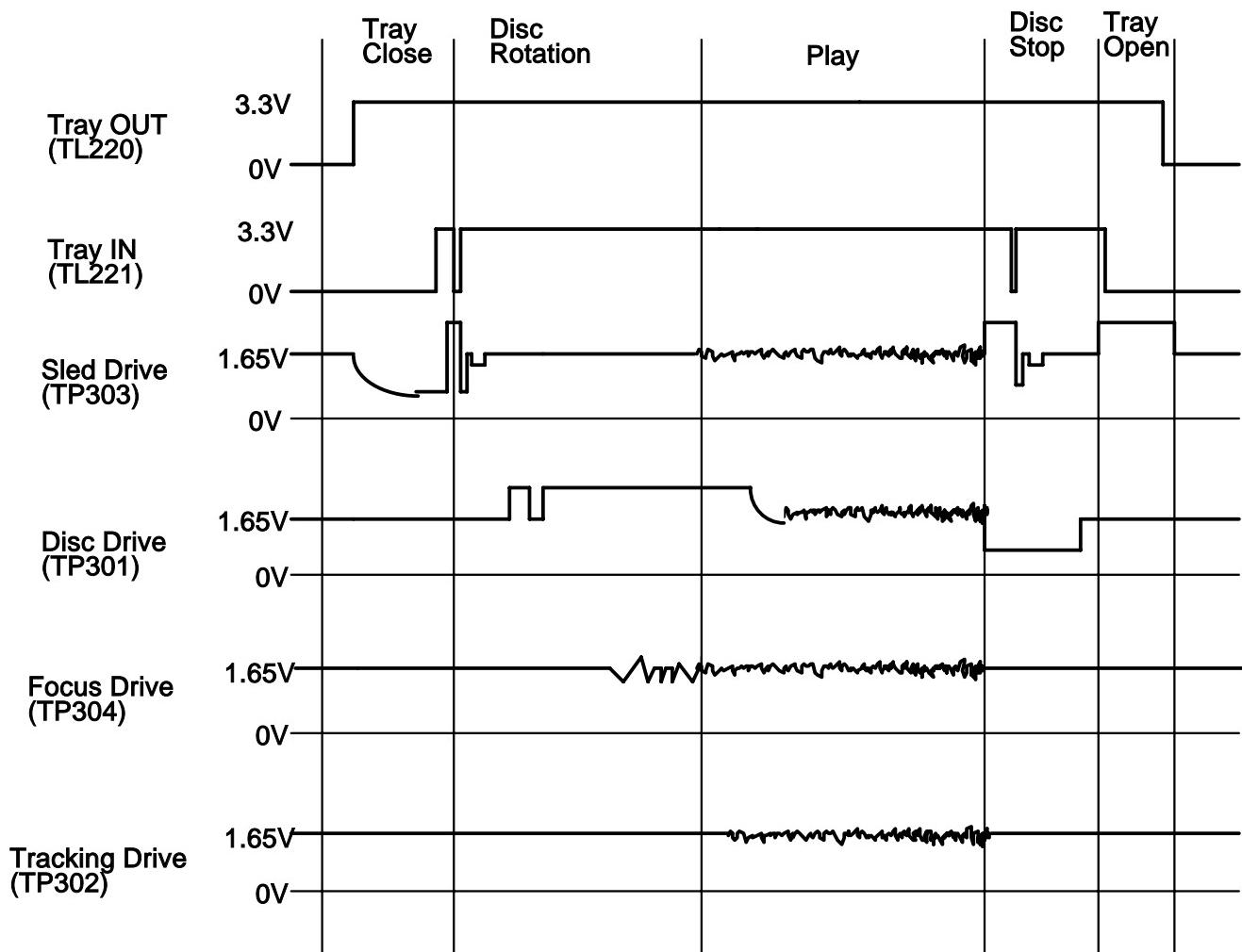
NOTE :

The voltage for parts in hot circuit is measured using hot GND as a common terminal.



7 SYSTEM CONTROL TIMING CHARTS

Tray Close ~ Play / Play ~ Tray Open

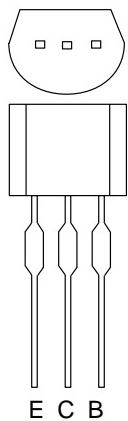


8 IC PIN FUNCTION DESCRIPTIONS

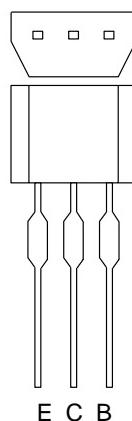
IC2001 [PT6313-S-TP]

Pin No.	In/Out	Signal Name	Name Function
1	In	FP-CLK	Clock Input
2	In	FP-STB	Serial Interface Strobe
3	In	K1	Key Data 1 Input
4	In	K2	Key Data 2 Input
5	-	VSS	GND
6	-	VDD	Power Supply
7	Out	a / KEY-1	Segment Output / Key Source-1
8	Out	b / Key-2	Segment Output / Key Source-2
9	Out	c / Key-3	Segment Output / Key Source-3
10	Out	d / Key-4	Segment Output/ Key Source-4
11	Out	e	Segment Output
12	Out	f	
13	Out	g	
14	Out	h	
15	-	VEE	Pull Down Level
16	Out	i	Segment Output
17	Out	7G	Grid Output
18		6G	
19		5G	
20		4G	
21		3G	
22		2G	
23		1G	
24	-	VDD	Power Supply
25	-	VSS	GND
26	In	OSC	Oscillator Input
27	Out	FP-DOUT	Serial Data Output
28	In	FP-DIN	Serial Data Input

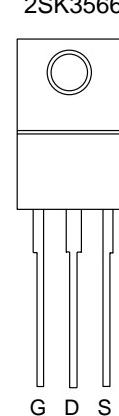
9 LEAD IDENTIFICATIONS



2SA1015-Y (TPE2)
KTA1266 (Y)
KTC3198 (Y)
2SC2120-Y(TPE2)
KTC3205 (Y)
2SC2236-Y-TPE6,C

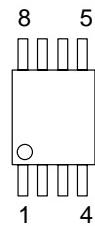


2SC2785 (H)
KTC3199 (GR)
KRA110M
KTA1267 (Y)
BN1L3Z (P)

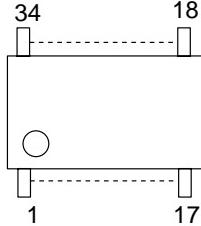


2SK3566

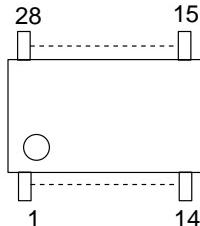
NJM4558D
KIA4558P



MM1567AJ



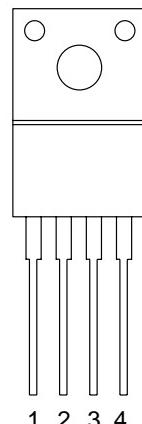
PT6313-S-TP



KIA431-AT



PQ070XF01SZ

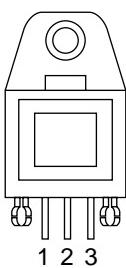


1: Vin
2: Vo
3: GND
4: Vc

LTV-817(B,C)-F



0C-0805T*002
GP1FA513TZ



Note:

- A: Anode
- K: Cathode
- E: Emitter
- C: Collector
- B: Base
- R: Reference
- G: Gate
- D: Drain
- S: Source

HITACHI
Hitachi, Ltd. Tokyo, Japan
International Sales Division
THE HITACHI ATAGO BUILDING,
No. 15-12 Nishi Shinbashi, 2-Chome,
Minato - Ku, Tokyo 105-8430, Japan.
Tel: 03 35022111

HITACHI EUROPE LTD,
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire
SL6 8YA
UNITED KINGDOM
Tel: 01628 643000
Fax: 01628 643400
Email: consumer-service@hitachi-eu.com

HITACHI EUROPE S.A.
364 Kifissias Ave. & 1, Delfon Str.
152 33 Chalandri
Athens
GREECE
Tel: 1-6837200
Fax: 1-6835964
Email: service.hellas@hitachi-eu.com

HITACHI EUROPE GmbH
Munich Office
Dornacher Strasse 3
D-85622 Feldkirchen bei München
GERMANY
Tel: +49-89-991 80-0
Fax: +49-89-991 80-224
Hotline: +49-180-551 25 51 (12ct/min)
Email: HSE-DUS.service@hitachi-eu.com

HITACHI EUROPE S.A.
Gran Via Carlos III, 101-1
08028 Barcelona
SPAIN
Tel: 93 409 2550
Fax: 93 491 3513
Email: atencion.cliente@hitachi-eu.com

HITACHI EUROPE srl
Via Tommaso Gulli N.39, 20147
Milano, Italia
ITALY
Tel: +39 02 487861
Tel: +39 02 38073415 Servizio Clienti
Fax: +39 02 48786381/2
Email: customerservice.italy@hitachi-eu.com

HITACHI Europe AB
Box 77 S-164 94 Kista
SWEDEN
Tel: +46 (0) 8 562 711 00
Fax: +46 (0) 8 562 711 13
Email: csgswe@hitachi-eu.com

HITACHI EUROPE S.A.S
Lyon Office
B.P. 45, 69671 BRON CEDEX
FRANCE
Tel: 04 72 14 29 70
Fax: 04 72 14 29 99
Email: france.consommateur@hitachi-eu.com

HITACHI EUROPE LTD (Norway) AB
STRANDVEIEN 18
1366 Lysaker
NORWAY
Tel: 67 5190 30
Fax: 67 5190 32
Email: csgnor@hitachi-eu.com

HITACH EUROPE AB
Egebæksgård
Egebækvej 98
DK-2850 Nærum
DENMARK
Tel: +45 43 43 6050
Fax: +45 43 60 51
Email: csgnor@hitachi-eu.com

HITACHI EUROPE AB
Neopoli / Niemenkatu 73
FIN-15140 Lahti
FINLAND
Tel : +358 3 8858 271
Fax: +358 3 8858 272
Email: csgnor@hitachi-eu.com

Hitachi Europe Ltd
Bergensesteenweg 421
1600 Sint-Pieters-Leeuw
BELGIUM
Tel: +32 2 363 99 01
Fax: +32 2 363 99 00
Email: sofie.van.bom@hitachi-eu.com

HITACHI EUROPE LTD
Na Sychrove 975/8
101 27 Praha 10 – Bohdalec
CZECH REPUBLIC
Tel: +420 267 212 383
Fax: +420 267 212 385
Email: csgnor@hitachi-eu.com